Dettlinger, Carl

From: Etzel, Sandra
Sent: Monday, October 19, 2015 3:43 PM
To: Dettlinger, Carl
Subject: FW: [External]-USS ET
Attachments: ETCompMACT - Rev 8 pdf.pdf

Please file under USS ET report and end with : – O&M

From: Coleen Davis [mailto:CDavis@uss.com]
Sent: Monday, October 19, 2015 3:11 PM
To: Ajenifuja, Hafeez
Cc: Dan Belack; 'Daniel C Havalo'; Mike Dzurinko; Etzel, Sandra
Subject: Re: [External]-USS ET

Hafeez,

Attached is the O&M Plan. There is one change - the pressure drop is 75.96 inches of water. All other numbers are the same as the version you have.

Coleen

From: "Ajenifuja, Hafeez" <HAjenifuja@achd.net>
To: 'Daniel C Havalo' <DCHavalo@uss.com>,
Cc: Dan Belack <DBelack@uss.com>, Mike Dzurinko <MDzurinko@uss.com>, "Coleen Davis" <CDavis@uss.com>, "Etzel, Sandra" <SEtzel@achd.net>
Date: 10/16/2015 09:58 AM
Subject: [External]-USS ET

Hi Dan,

1. The most recent Operation and Maintenance Plan date we have in the permit is October 12, 2012. Is there any revision to the O & M Plan and date?
2. Has there been any changes to the casthouse and BOP baghouses fan motor amps? We currently have in the permit 662 amps (Casthouse BH); 305 amps (BOP secondary baghouse); pressure drop 66.9 inches of water column and 3,203 gpm (for venture scrubber).

Please let me know as soon as you can as we are in the process of updating and finalizing the permit. Also, if there is an updated O & M Plan, please send us a copy.

Thanks

Hafeez Ajenifuja
Air Quality Program
Allegheny County Heath Department
301 39th Street, Pittsburgh PA 15201
412-578-8132

United States Steel Corporation
Edgar Thomson Works

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40 CFR Subpart FFFFF
National Emission Standard for Hazardous Air Pollutants
For Integrated Iron and Steel Manufacturing Facilities

Revision 8
October 19, 2015

- **Operation and Maintenance Plan**
- **Site-Specific Monitoring Plan**
- **Startup, Shutdown and Malfunction Plan**

Applicable to the following:

- **Processes:**
  - **#1 and #3 Blast Furnace Emission System**
  - **"F" and "R" BOP Furnace Emission System**
  - **LMF Emission System**
  - **Mixer Emission System**

Table of Contents

PART II.

Process Specific Plans

A. Introduction

1.0 Background

National Emissions Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing were promulgated under 40 CFR 63 Subpart FFFFF on May 20, 2003. The standards specify the following as affected facilities under 40 CFR 63 Subpart FFFFF:

- sinter plants
- blast furnaces
- basic oxygen process furnaces (BOPF)

The standards address emissions from each of the following emission sources:

- Sinter plant windbox exhaust
- Sinter plant discharge end
- Blast furnace casthouse
- Basic oxygen process furnace (BOPF)
- BOPF shop hot metal transfer
- BOFP shop hot metal desulphurization
- BOPF shop hot metal slag skimming
- BOPF shop ladle metallurgy

2.0 Purpose

These standards require that certain plans be developed and implemented by May 22, 2006. The purpose of this document is to comply with the requirements of 40 CFR 63 Subparts A and FFFFF to develop and implement the following plans:

- Operation and maintenance plan
- Site-specific monitoring plan
- Startup, shutdown and malfunction plan

3.0 Applicability

3.1(a) Operation and Maintenance Plan

40 CFR 63.7800(b) requires that a written Operation and Maintenance plan be developed and implemented for each capture system and control device subject to an operating limit specified in 40 CFR 63.7790(b)*:

- Blast furnace casthouse particulate emission capture systems
- BOPF secondary particulate emission capture systems

- BOPF venturi scrubber primary particulate emission control systems

* For purposes of this plan, "emission capture system" includes emission capture hoods, ductwork, dampers and fans important to the efficient collection and transport of particulate emissions to a particulate emission control device. The particulate emission control device is not part of the particulate emission capture system.

3.1(b) Site-Specific Monitoring Plan

40 CFR 63.7831(a) requires that a Site-Specific Monitoring Plan be developed and implemented for each Continuous Parametric Monitoring System (CPMS) required in 40 CFR 63.7830. Therefore, each CPMS associated with each particulate emission capture system and each particulate emission control device required to have an Operation and Maintenance Plan, listed in 1.3(a) above, is also required to have a Site-Specific Monitoring Plan.

3.1(c) Startup, Shutdown and Malfunction Plans

40 CFR 63.7810(c) requires that a written Startup, Shutdown and Malfunction Plan be developed and implemented according to the requirements of 40 CFR 63.6(e)(3), which states in part:

> *"...The owner or operator of an affected source must develop and implement a written startup, shutdown and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown and malfunction, and a program of corrective action for malfunctioning process and air pollution control and monitoring equipment used to comply with the relevant standard."*

Therefore, the Startup, Shutdown and Malfunction Plan must address all process, particulate emission control equipment and monitoring equipment used to comply with the standard.

4.0 Letter from Environmental Protection Agency

Mulrine.Phil@epamail.epa.gov
06/20/2005 04:20 PM

To William S Kubiak <WSKubiak@uss.com>
cc Fruh.Steve@epamail.epa.gov
bcc
Subject Re: Clarification of I&S MACT Requirements

Bill,
I agree with your interpretation of the integrated iron & steel standard operating limit requirements. Let me know if you have any other questions.

Phil

William S Kubiak <WSKubiak@uss.com>
06/17/2005 10:44 AM

To Phil Mulrine/RTP/USEPA/US@EPA
cc Steve Fruh/RTP/USEPA/US@EPA
Subject Clarification of I&S MACT Requirements

Phil,

I appreciate your taking time to go over the operating limit requirements
with me.

Just to confirm our discussion, I understand operating limits to apply as
follows:

1. Capture systems associated with the sinter windbox, BOP hot metal transfer, BOP hot metal desulfurization, BOP hot metal slag skimming and
BOP ladle metallurgy are not required to establish operating limits for
volumetric flow rate, fan amps, static pressure or damper positions.

2. Since the capture systems listed in No. 1 above are not required to
establish operating limits, they are also not required to be included in
any written Operation and Maintenance Plan required by 63.7800(b).

B. No. 1 and No. 3 Blast Furnace Casthouse Emission Control Systems

1.1 Description of Capture System During Production

1.2 Operation and Maintenance Plan

1.3 Process Specific Monitoring Plan

1.4 Startup, Shutdown and Malfunction Plan

1.5 Plan Maintenance, Record Keeping and Reporting

1.1 Description of Capture System During Production

The Blast Furnace Bag House collects the fugitive emissions from the number one and number three blast furnace cast houses via ducts that are located in front of each furnace tap hole. These fugitive emissions are directed toward the ductwork by the operation of an air curtain. From the hood and ductwork, the induced draft fans convey the emissions to a four (4) module Wheelabrator positive pressure pulse jet type baghouse. The gas stream is cleaned by impinging particulate matter on the outside of the filter media.

The bags in each module are periodically cleaned by means of high pressure air directed through a venturi mounted at the top of each individual bag. The dust, after being loosened from the bag exterior, falls into the module hopper.

1.2 Operation and Maintenance Plans

1.2.1 Scope

The following particulate emission capture systems and particulate emission control devices are covered by this plan:

- Particulate emission capture systems
  - #1 and #3 Blast Furnace Casthouse Emissions Capture System

- Particulate emission control devices
  - #1 and #3 Blast Furnace Casthouse Baghouse

1.2.2 Equipment inspection of capture systems for #1 and #3 Blast Furnace Baghouse (63.7800(b)(1))

(a.) Equipment to be inspected:

Equipment	Inspecting Frequency	Inspecting Department	Recording Method	Regulatory Citation
Ductwork to Isolation Dampers (external)	Monthly	BF Maintenance	Form No. E-27905-50-001	63.7800(b)(1)
Air Curtain System Integrity	Monthly	BF Maintenance	Form No. E-27905-50-001	63.7800(b)(1)

Emission Gas Lances	Monthly	BF Maintenance	Form No. E-27905-50-001	63.7800(b)(1)
Emission Hood	Monthly	BF Maintenance	Form No. E-27905-50-001	63.7800(b)(1)
External Ductwork from Isolation Damper	Monthly	Utilities	*ESS*	63.7800(b)(1)
Isolation Damper and Actuator	Monthly	Utilities	*ESS*	63.7800(b)(1)
Baghouse Fans Integrity	Monthly	Utilities	*ESS*	63.7800(b)(1)

(b.) All deficiencies found during inspections listed in the above table such as holes, corrosion, deformation, broken drives or belts or any other conditions affecting performance will be recorded on existing inspection forms. Corrective action will be completed before the next scheduled inspection.

1.2.3 Preventative Maintenance of Control Devices Casthouse Baghouse (63.7800.(b)(2))

(a.) Refer to current baghouse inspection frequency as listed in Environmental ISO Procedure "Blast Furnace Baghouse" ID. E-76540-07-001, Section 3.0. This preventative maintenance schedule in the Environmental ISO Procedure is consistent with good operating practice for routine or long term maintenance.

1.2.4 Operating Limits for #1 and #3 Blast Furnace Casthouse Baghouse (63.7800(b)(3))

Operating Parameter	Monitoring Method	Recording Method	Averaging Frequency	Parameter Values	Regulatory Citation
Fan amps	Current Transducer	Electronic via PI	Hourly	662 amps with either 1 or 2 Furnaces casting	63.7800(b)(3)
Damper Position	Position Feedback Transmitter	Electronic via PI	N/A	Appendix A	63.7800(b)(3)

(a.) Description of capture system design and capture system in operation during production will be maintained in Appendix A. (63.7800(b)(3)(iii))

(b.) Rationale for why the parameter was chosen will be maintained in the Monitoring Plan. (63.7800(b)(3)(iii))

(c.) Description of each selected operating limit parameter is shown in the above table. (63.7800(b)(3)(iii))

(d.) Description of the method used to monitor parameters is shown in the above Table. (63.7800(b)(3)(iii))

(e.) Data used to set the value or settings for fan amps will be maintained in the Environmental Control Department files. (63.7800(b)(3)(iii))

1.2.5 Bag Leak Detectors (63.7800(b)(4))

The Wheelabrator baghouse used for the capture of Casthouse emissions is a positive pressure type baghouse and is not required by this legislation to have bag leak detectors. (63.7830(b)(3)(i) and (ii))

1.3 Process Specific Monitoring Plans

1.3.1 Scope

The following continuous parametric monitoring systems (CPMS) are covered by this plan:

- #1 and #3 Blast Furnace Casthouse Baghouse fan amp
- #1 and #3 Blast Furnace Casthouse Baghouse damper actuator position

1.3.2 Plan Elements

(a.) For each CPMS, a site-specific monitoring plan must be incorporated and made available to the permitting authorities for each of the items prescribed as follows:

Measuring System	Monitoring Method	Recording Method	Averaging Frequency	Regulatory Citation
Fan amps	Current Transducer	Electronic via PI	Hourly	63.7831(a)
Damper Position	Position Feedback Transmitter	Electronic via PI	N/A	63.7831(a)

(b.) Documentation that each CPMS that sample probes and other interfaces are installed and located such that measurements are representative is maintained in PI and Engineering and/or Utilities Department files. (63.7831(a)(1))

(c.) Documentation of performance evaluation procedures and calibrations will be maintained in Environmental and/or Utilities Department files. (63.7831(a)(3))

(d.) Documentation of ongoing operation and maintenance procedures in accordance with the general requirements of 63.8(c)(1),(c)(3),(c)(4)(ii), (c)(7) and (c)(8) will be maintained in the Utilities Department files. (63.7831(a)(4))

(e.) Documentation for each CPMS will be maintained in Appendix B. (63.7831(a)(2))

(f.) Documentation for each CPMS that ongoing data QA procedures consistent with 40 CFR 63.8(d). (Not applicable to this process) (63.7831(a)(5))

(g.) Documentation for each CPMS that ongoing record keeping and reporting procedures consistent with the general requirements of 40 CFR 63.10(c), (e)(1) and (e)(2)(i) will be maintained in the PI monitoring system Environmental Control Department and appropriate operating department files. (63.7831(a)(6))

1.3.3 Rationale for Measuring System Selection

(a.) Monitoring of fan amperage provides an indication of flow rate, volume and pressure in the capture system.

(b.) Monitoring damper position provides an indication of flow from the capture system to the capture device.

1.3.4 Inspections Specific to Baghouses

Baghouse Equipment	Inspection Frequency	Monitoring Method	Recording Method	Regulatory Citation
Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in Section 2.1 of the ISO Procedure "Blast Furnace Baghouse" ID. E-76540-07-001.	Daily	Visual	Form No. E-76540-50-001	63.7830(b)(4)
Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.	Weekly	Visual	Form No. E-76540-50-001	63.7830(b)(4)
Check the compressed air supply for pulse-jet baghouses.	Daily	Visual	Form No. E-76540-50-001	63.7830(b)(4)
Monitor cleaning cycles to ensure proper operation using an appropriate methodology.	Daily	Visual	Form No. E-76540-50-001	63.7830(b)(4)
Check bag cleaning mechanisms for proper functioning using an appropriate methodology.	Monthly	Visual	Form No. E-76510-50-003	63.7830(b)(4)
Confirm the physical integrity of the baghouse through visual inspections of the baghouse interior for air leaks.	Quarterly	Visual	Work Order.	63.7830(b)(4)
Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors or equivalent means.	Quarterly	Vibration Analysis	Report	63.7830(b)(4)

1.4 Startup, Shutdown and Malfunction Plans

1.4.1 Scope

The following particulate emission capture systems and particulate emission control devices are covered by this plan:

- Blast Furnace #1 and #3
- Particulate emission capture systems
  - #1 and #3 Blast Furnace Casthouse Emissions Capture System
- Particulate emission control devices
  - #1 and #3 Blast Furnace Casthouse Baghouse

1.4.2 Plan Elements

(a.) Start-up

During burn-in of new trowel iron and slag runner systems, some excess emissions from the Casthouse may be present.

(b.) Shutdown

Nothing identified.

(c.) Malfunction

- Malfunctions to the Casthouse Baghouse capture system and capture device may occur during operations due to mechanical, electrical, or control failure (computer hardware and software).
- The Blast Furnace Capture System Malfunction and Corrective Action Plan are included in ISO Procedure "#1 & #3 Cast House Air Emission Control" ID E-27900-07-001, Section 4.0.
- The Blast Furnace Control System Malfunction and Corrective Action Plan is included in ISO Procedure "Blast Furnace Baghouse" ID E-76540-07-001, Section 4.0.

1.5 Plan Maintenance, Recordkeeping and Reporting

1.5.1 Initial Plan Requirements

- The Operation and Maintenance Plan, Site-Specific Monitoring Plan, and Startup, Shutdown and Malfunction Plan must be developed and implemented by May 22, 2006.
- Failure to meet any condition in a plan is a deviation and must be reported as such in the periodic deviation report.

1.5.2 Plan Revisions

- Plans may be revised at any time provided you notify your permitting agency that you have done so in the next periodic Title V compliance certification.

1.5.3 Record Keeping

- You must keep all current plans, superseded plans and all information necessary to demonstrate that you have complied with each plan requirement on-site for a period of at least 5 years. The first three years the information must be kept on-site and the last two years information can be stored off-site.

1.5.4 Special Startup, Shutdown and Malfunction reporting requirement

- If, at any time, you fail to follow your Startup, Shutdown and Malfunction Plan during a startup, shutdown or malfunction event you must report that failure by telephone, FAX or E-Mail within 2 days following the deviation from the plan.
- You must also send a letter within 7 days following the end of the startup, shutdown or malfunction event, including the following information:
  - Your name and title
  - Certifying signature of the plant Responsible Official
  - How the startup, shutdown or malfunction event happened
  - What you did in response to the event
  - Reasons you did not follow your plan
  - Whether any regulated HAP emissions or monitored parameters were higher or different from their allowable values during the startup, shutdown or malfunction event.
  - Within 45 days of the end of the event, you must revise the plan to describe what you will do if the event occurs again.

Appendix A:

Operational Description of No. 1 and No. 3 Blast Furnace Casthouse Emission Control System

1.0 INTRODUCTION

This document is intended to describe the casthouse emission system equipment and operation for the Nos. 1 and 3 Blast Furnaces at the Edgar Thomson Plant.

2.0 SYSTEM OVERVIEW

The system is divided into the collection system and the control system. The collection system consists of trough hoods located over the iron notch, iron and slag trough at both blast furnaces, air curtain systems utilized to help contain the fumes within the hoods at both blast furnaces, collection ductwork at each furnace and butterfly type isolation dampers for each furnace.

The control system consists of a central baghouse that controls emissions from both the No. 1 and No. 3 blast furnace casthouses. The baghouse consists of four (4) positive pressure compartments, each with its own separate fan and 250 HP motor.

Each compartment fan is equipped with an inlet and outlet isolation damper. The inlet damper is a simple mechanical blank off plate. The outlet damper is electrically operated to control fan motor current under normal operating conditions.

The main fans channel the dust laden casting emissions through the compartment filter bags and the cleaned air is passed out into the atmosphere. The dust and debris that accumulates on the outside of the bags are cleared by periodic cleaning to maintain adequate air flow.

To insure maximum airflow to the baghouse while both Blast Furnaces are casting, off-line compartment cleaning will not be allowed.

There are five modes of operation for compartment cleaning. They are: **Differential Pressure, Continuous**, **Manual**, **High Differential Pressure**, and **Off**. The method of cleaning each module is accomplished by pulsing the filter bags with compressed air through solenoid-operated valves. Each module contains 30 solenoids, which will be energized in alternating pairs.

For the cleaning of the modules the baghouse uses the plant air supply and at times the drill air compressor is used for higher pressure cleaning. The introduction of the compressed air into the filter bag dislodges the accumulated dust so it can fall into a hopper at the bottom of each compartment. Once the dust is at the bottom of the hopper, a continuously operated screw conveyor directs the dust and debris into four dustbins

located directly below each hopper screw conveyor. The individual dustbins are visually checked periodically and emptied upon operator discretion.

3.0 DAMPER CONTROL

The baghouse configuration consists of furnace isolation dampers and fan outlet dampers. The furnace isolation dampers are used to shut off air flow or allow air flow from the respective furnace. The fan outlet dampers are used to control fan amps and to cut the air flow during module cleaning. The baghouse processor will keep the fan outlet dampers and isolation dampers closed when neither furnace is casting. The "Cast", "No Cast" signals work off of the operation of the "Cast Switch" located in each cast house control room and the drill.

When a furnace goes to Cast the associated isolation damper will open for that furnace. When one of the dampers opens all dampers of running fans will open as well, controlling the fan amps to a predetermined set point.

When No. 1 furnace goes to cast and No. 3 furnace is already casting, the damper for No. 3 furnace will close to the pre-selected setpoint to allow only partial air flow. Once No.1 furnace has been on line for 10 minutes the damper for number 3 furnace will then be reopened all the way. This procedure was added to direct the maximum collection volume to trough hood during the drill-out and initial tap when emissions are typically the greatest.

The baghouse operator will have a maintenance mode of control of the furnace isolation dampers if a furnace is in a 'no cast' state. If a furnace is off cast, the bag house operator will have the ability to open the isolation damper to any position desired. However, if the damper is open more than 40 percent while the other furnace is casting all off-line cleaning will be suspended.

The fan outlet dampers are controlled by digital outputs from the control processor to open or close each damper. The process controller will control module fan amps by positioning the modules damper. The modules final amps will be with in 20 amps of the setpoint provided that the module can achieve the setpoint without the damper being opened a hundred percent. The control processor also controls the damper for clean. When the module goes into a cleaning cycle the processor will close the damper to allow for maximum cleaning of the bags.

4.0 MACT ALARMS

The following alarms are considered MACT alarms and require the reaction of the appropriate personnel.

Compartment No. 1 Low Amps
Compartment No. 2 Low Amps
Compartment No. 3 Low Amps
Compartment No. 4 Low Amps
Cast House No. 1 Isolation Damper Open Failure
Cast House No. 1 Isolation Damper Close Failure
Cast House No. 3 Isolation Damper Open Failure
Cast House No. 3 Isolation Damper Close Failure

These alarms will be annunciated in the Gas Washer Control Room, both furnace mud gun rooms and each furnace's command center.

The MACT fan amp limit has been changed from 2 separate limits (a 1 Furnace casting limit and a 2 Furnace casting limit) to 1 limit for either a 1 or a 2 Furnace casting operation.

The trigger points for the Low Amperage Alarms will be set at the time of the compliance test.

Only the personnel in the gas washer control room can acknowledge the alarm. This person is also responsible for initiating the appropriate procedure to determine the cause of the alarm and initiate corrective action. The alarm in the other two areas is to ensure that the presence of an alarm condition is known and to ensure that the personnel in these areas notify the gas washer personnel of an unacknowledged alarm.

5.0 MONITORING

The following parameters will be monitored by the local instrumentation coupled to the local PLC and the instantaneous readings will be electronically transferred to the PI monitoring system. Alarms will be provided when a parameter is out of a preset range or minimum setpoint.

Individual compartment pressure drop
Individual compartment fan amperage
Furnace isolation damper positions
Cleaning air pressure

Local instrumentation for measuring pressures are typically pressure transmitters while fan amps are measured by current transducers. Damper positions are measured using limit switches. All of the local instrumentation is connected to a PLC which is in turn networked into the PI system.

All MACT alarms and their time of acknowledgement will be on the PI monitoring system.

Pressure drop and fan amperage will be averaged on an hourly basis with the hour being an hour of operation, not necessarily a clock hour.

Cleaning air pressure has a minimum alarm setpoint. It's now an hourly average.

Appendix B:

CPMS Documentation

- Ohio Semitronics, Inc. Single-Phase AC Current Transducer Installation and Operating Instructions.

- Kerry Actuators

KERRY ACTUATOR

OPERATION

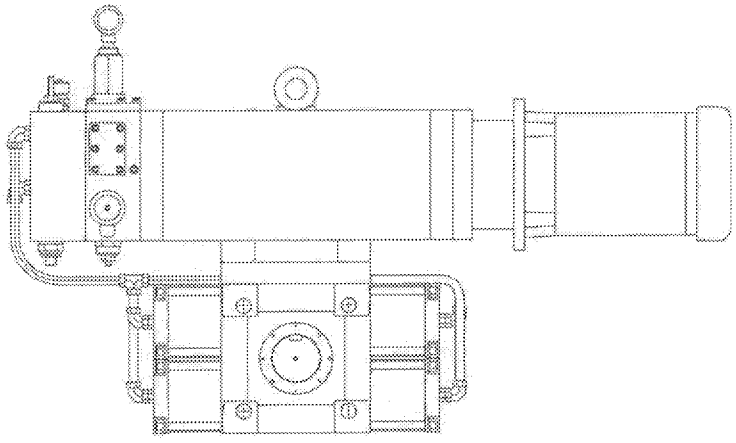
AND

MAINTENANCE

MANUAL

FOR

USS CORP.
ET WORKS
BRADDOCK, PA 15104
CUSTOMER PO#: 00560342
DATE ORDERED: 1/3/06
DATE REQUIRED: 1/28/06
KERRY NUMBER: 1012890



THE KERRY COMPANY INC.
P.O. BOX 51
3003 WILDWOOD SAMPLE ROAD
ALLISON PARK, PA 15101
PHONE: 412-486-3388
FAX: 412-486-7449

GENERAL SPECIFICATIONS

SERIES:	KRE-25000
ROTATION:	90 DEGREES
TORQUE CW:	2080 FT-LBS
PRESSURE CW:	2500 PSI
TORQUE CCW:	2080 FT-LBS
PRESSURE CCW:	2500 PSI
SPEED CW:	7.5 DEGREES/SEC
TOTAL TIME CW:	12 SECONDS
SPEED CCW:	7.5 DEGREES/SEC
TOTAL TIME CCW:	12 SECONDS
SHAFT TYPE:	2 1/4" BORE WITH 9/16" SQ. KEY
MOUNTING:	FRONT FLANGE
MOTOR:	1 HP: 1725 RPM: 230/460/3/60: 56C FRAME.
HYDRAULIC FLUID:	76 UNAX AW-WR32
ATTITUDE OF ACTUATOR:	HORIZONTAL
STANDARD FEATURES:	TWO ADJUSTABLE PRESSURE CONTROLS TWO ADJUSTABLE SPEED CONTROLS TWO PILOT OPERATED CHECK VALVES TWO LOAD HOLDING CHECK VALVES TWO PRESSURE TEST TAPS TWO SUCTION CHECK VALVES BI-ROTATIONAL GEAR PUMP SEALED CAPTIVE AIR RESERVOIR CHROME PLATED THRUST ROD
SPECIAL FEATURES:	ONE ROTARY TRANSMITTER 4-20 mA WITH 4 SPDT LIMIT SWITCHES (TRANSMITTER CALIBRATED FOR A 4-20 mA OUTPUT IN THE CLOCKWISE DIRECTION OF ROTATION AS DEFINED BY THE OUTPUT SHAFT OF THE ACTUATOR.) ONE MANUAL PUMP SYSTEM

MCT5 SINGLE PHASE AC CURRENT TRANSDUCER

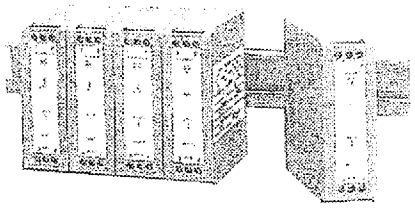
DIN RAIL MOUNTED AC CURRENT TRANSDUCER
0.25% ACCURACY

FEATURES

- Ruggedized Polyamide DIN mount case.
- Slim profile allows maximum use of available space.
- Field selectable analog outputs.
- Recessed terminals provide increased safety.

APPLICATIONS

- Ideal for use in enclosures with dimensional constraints.
- Designed for industrial environments.
- OEM measurement systems.
- Designed for use with OSI current transformers.
- Easily integrated into control systems.



Transducer output is derived from the average absolute value of the input and calibrated as the RMS value of a sine wave input.

*Models are self-powered from measured AC input line with DIP switch selectable 0-1mA, 0-5Vdc, or 0-10Vdc output.
**Denotes 4-20mA loop-powered unit, (15-40Vdc).
All other units require 85-135 Vac instrument power.

INPUT	STANDARD OUTPUTS MODEL MCT5-		
AC AMPS	0-1mAdc*	4-20mAdc	4-20mAdc**
0 to 1.0	001A	001E	001E2
0 to 5.0	005A	005E	005E2

ORDERING INFORMATION

Example: 0-5A Input with 4-20mA Output.
MCT5 - 005E

5 YEAR WARRANTY

c UL us LISTED

Measuring Equipment 7N93

SPECIFICATIONS

INPUT
- Current ..... See Table
- Frequency Range ..... 48 to 65Hz.; 60Hz. Nom.
- Burden ..... 1 Amp models 0.05VA
  - 5 Amp models 0.175VA
- Current Overload
  - 2 X F.S. rating ..... (continuous)
  - 10 X F.S. rating ..... (10Sec./Hr.)
- Dielectric Test...(Input/Output) 1500Vac

OUTPUT
- Ripple ..... < 1.0% F.S.
- Response ..... (99%) ..... 400 milliseconds
- Field Adjustable Span ..... ± 5%

OUTPUT LOADING (Ohms)
- 4-20mA 0-500
- 4-20mA ..... (24V Loop Power) 0-600
- 0-1mA 0-10k
- 0-5Vdc ..... > 5M
- 0-10Vdc ..... > 10M

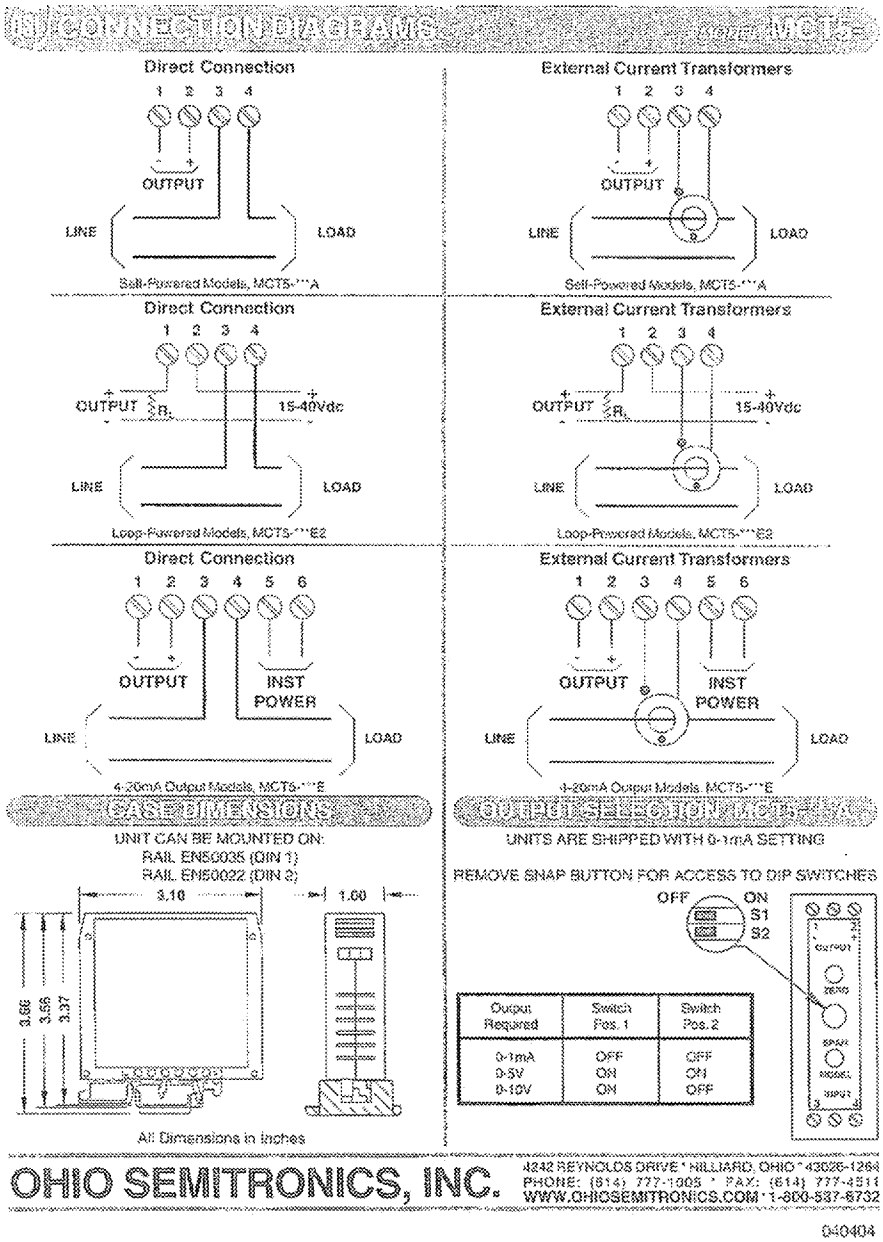
ACCURACY ..... ±0.25% F.S.@ 60Hz
Includes effects of linearity and setpoint.
- Temperature Effect ..... (-20°C to +65°C) ..... ± 1.0%
- E Output ..... (-20°C to +40°C) ..... ± 1.0%
- Instrument Power 85-135Vac, 50-60Hz, 3VA
- Loop Powered 15-40Vdc
- Termination ..... Wire size 22 to 12 AWG
- Net Weight ..... 0.4 Lb.

CONNECTION DIAGRAMS AND DIMENSIONS SHOWN ON NEXT PAGE

(Consult factory for availability of DIN rail)

OHIO SEMITRONICS, INC.
4242 REYNOLDS DRIVE • HILLIARD, OHIO • 43026-1264
PHONE: (614) 777-1005 • FAX: (614) 777-4511
WWW.OHIOSEMITRONICS.COM • 1-800-537-6732

040404



INSTALLATION INSTRUCTIONS

1. Installation should be performed by qualified electricians only!
2. Make sure electrical service is disconnected before making any electrical connections.
3. Branch circuit protection is required to be provided in accordance with the National and Local codes of the inspection authority.
4. Route wires as required and secure to terminals per connection diagram on this sheet and on the unit.

OPERATING INSTRUCTIONS

1. This unit is intended for indoor use at altitudes up to 2000 meters.
2. Transient overvoltages according to Installation Category (overvoltage category)II, pollution Degree 2.
3. The output signal is intended to be "Not accessible to the user." To prevent contact with live circuits, the transducer is required to be mounted in an enclosure that requires the use of a tool for access.
4. If cleaning of the exterior surface is necessary, de-energize all services of supply (both measuring and instrument power circuits) and brush with a soft brush or blow off with low pressure air. Use appropriate eye protection. Not suitable for hose-down cleaning.
5. Maximum relative humidity 80 percent for temperatures up to 31°C decreasing linearly to 50 percent relative humidity at 40°C.
6. Maximum operating temperature range is -20°C to 65°C (-20°C to 40°C for "E" suffix models).

WARRANTY STATEMENT

Ohio Semitronics, warrants this unit to be free of defects in material and workmanship for a period of five years from date of shipment. This unit must not be used in any manner other than as specified in this document.

OHIO SEMITRONICS, INC.
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040404

Appendix C:

Definitions

Control Device: A mechanical device with integral filter media located at the end of the Capture System that entraps or entrains the fumes, dust and other non-gaseous pollutants generated by the Blast Furnace under normal operating conditions.

Capture System: That equipment or devices including but not limited to hoods, air curtains, fans, ductwork and dampers used to capture and convey emissions generated by the Blast Furnace to the Capture Device. The physical limits of the Capture System extend from the Blast Furnace troughs to the inlet flange of the Capture Device.

ESS: *Environmental Software System utilized to track, report and document environmental requirements.*

Malfunction: Any sudden, infrequent, and not reasonably prevented deviation in the process or a mechanical anomaly causing an upset condition where the maximum allowable emission levels of the Capture Device are exceeded or the Capture System fails to provide valid data to the monitoring system within the prescribed measurement ranges. Examples may include but are not limited to alarm conditions caused by: filter cleaning system failure (including insufficient air pressure), damper actuator failure, fan motor failure and breaking of a fan belt or fan belt slippage. Although not alarmed conditions, baghouse filter media leakage and conveyor failure are also considered to be a *malfunctions.*

PI A computer based process parameter monitoring system.

Primary Emissions Particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system.

Secondary Emissions Particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings and gaps or tears in ductwork to the primary emission control system.

Shutdown: The standard operational procedure (SOP) for removing a Blast Furnace from operation for reasons of inspection, maintenance or repair.

Startup: The standard operational procedure (SOP) for bringing a Blast Furnace back into operation after inspection, maintenance or repair.

C. BOP Gas Cleaning System

1.1 Description of System During Production

1.2 Operation and Maintenance Plan

1.3 Process Specific Monitoring Plan

1.4 Startup, Shutdown and Malfunction Plan

1.5 Plan Maintenance, Record Keeping and Reporting

1.1 Description of System During Production

The BOP Scrubber Venturi collects the primary emissions from the "F" and "R" vessel respectively via a close coupled hood located above the mouth of each vessel during O_2 blowing operations. These primary emissions are directed toward the quencher by means of a water cooled duct. Large particulates and agglomerated fines from the quencher are separated from the gas stream by means of the scupper and grizzly located upstream of the venturi Kinpactor. The remaining fine particles are separated from the gas stream at the venturi and entrained in the quench water sprays. From the venturi, the gas stream is conveyed through a gas cooling tower to the ID fans. From the ID fans, the cleaned gas stream is conveyed through a stack to the atmosphere.

1.2 Operation and Maintenance Plan

1.2.1 Scope

The following particulate emission capture systems and particulate emission control devices are covered by this plan:

- Particulate emission capture systems
  - "F" BOP Vessel Emissions Capture System
  - "R" BOP Vessel Emissions Capture System

- Particulate emission control devices
  - "F" BOP Vessel venturi scrubber
  - "R" BOP Vessel venturi scrubber

1.2.2 Equipment inspection of capture systems for "F" and "R" Vessel emission capture systems (63.7800(b)(1))

(a.) The following equipment is to be inspected (all equipment except scrubber venturi and scrubber venturi pump) for the BOP Primary Emission Control Capture System are not enforceable requirements under 40 CFR 63 Subpart FFFFF and are also not required to demonstrate compliance with applicable operation and maintenance requirements under 40 CFR 63.7826(b)(1) and 40 CFR 63.7834(a).

Equipment	Inspecting Frequency	Inspecting Department	Recording Method	Regulatory Citation
Vessel Hoods	Monthly	BOP Maintenance	Thermography Report	63.7800(b)(1)
Ductwork from Quencher to Damper	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Vessel Isolation Dampers	Monthly	BOP Maintenance	Form No. E-30600-45-001	N/A
E-Stack and Seal	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Hood Sprays System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Quencher Water System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Recycle Water System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Thickener and Drum System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Gas Cooling Water System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Scrubber Venturi	Daily	Utilities	*ESS*	63.7800(b)(1)
Scrubber Venturi Pump	Daily	Utilities	*ESS*	63.7800(b)(1)
Ductwork from Cooling Tower to ID Fans	Monthly	Utilities	*ESS*	63.7800(b)(1)
Hood Closed Loop Cooling Water System	Monthly	Utilities	*ESS*	63.7800(b)(1)
Hood Open Loop Cooling Water System	Monthly	Utilities	*ESS*	63.7800(b)(1)
A&B ID Fan System	Monthly	Utilities	*ESS*	63.7800(b)(1)

(c.) All deficiencies found during inspections listed in the above table such as holes, corrosion, deformation, broken drives or belts or any other conditions affecting performance will be recorded on existing inspection forms.

(d.) Corrective action will be completed before the next scheduled inspection.

1..3 Preventative Maintenance of Control Devices for "F" and "R" Venturi Scrubber (63.7800.(b)(2))

(a.) Refer to current primary scrubber system inspection frequency as listed in Environmental ISO Procedure E-76510-07-001 Section 3.0.

(b.) The preventative maintenance schedule in the Environmental ISO Procedure is consistent with good operating practice for routine or long term maintenance.

1..4 Operating Limits for "F" and "R" BOP vessel venturi scrubber *(63.7824(b))*

Measuring System	Monitoring Method	Recording Method	Averaging Frequency	Parameter Values	Regulatory Citation
Scrubber Water Flow Rate	Flow Meter with Orifice Plate	Electronic via PI	Hourly	3203 GPM	63.7824(b)
Venturi Differential Pressure	Differential Pressure Transmitter	Electronic via PI	Hourly	*75.96" of Water*	63.7824(b)

(a.) Primary emissions generated from "F" and "R" BOP vessels are conveyed to venturi type scrubbers located at the end of the capture systems.

~~(b.) Rationale for why the parameters were chosen will be maintained in the Monitoring Plan. (63.7800(b)(3)(iii))~~ *Not Applicable To Primary Venturi Scrubbers*

(c.) Description of each selected operating limit parameter is shown in the above table. *(63.7824(b))*

(d.) Description of the method used to monitor parameters is listed in the above Table. *(63.7824(b))*

(e.) Data used to set the value or settings for the parameters of each process configuration will be maintained in the Environmental Control Department files. *(63.7824(b))*.

1..5 *Corrective Action Procedures for "F" and "R" BOP vessel venturi scrubber (63.7800(b)(5)).*

a) Refer to current primary scrubber system Environmental ISO Procedure E-76510-07-001 Section 2.0.

1.3 Process Specific Monitoring Plans

1.3.1 Scope

The following continuous parametric monitoring systems (CPMS) are covered by this plan:

- "F" and "R" BOP vessel venturi scrubber water flow
- "F" and "R" BOP vessel venturi scrubber differential pressure

1.3.2 Plan Elements

(a.) For each CPMS, a site-specific monitoring plan must be incorporated and made available to the permitting authorities for each of the items prescribed as follows:

Operating Parameter	Monitoring Method	Recording Method	Averaging Frequency	Regulatory Citation
Scrubber Water Flow Rate	Flow Meter with Orifice Plate	Electronic via PI	Hourly	63.7800(b)(3)
Venturi Differential Pressure	Differential Pressure Transmitter	Electronic via PI	Hourly	63.7800(b)(3)

(b.) Documentation that each CPMS that sample probes and other interfaces are installed and located such that measurements are representative is maintained in the Engineering and/or Utilities Department files. (63.7831(a)(1))

(c.) Documentation for each CPMS will be maintained in the Engineering and/or Utilities Department files. (63.7831(a)(2))

(d.) Documentation of performance evaluation procedures and calibrations will be maintained in the Engineering and/or Utilities Department files. (63.7831(a)(3)).

(e.) Documentation of ongoing operation and maintenance procedures in accordance with the general requirements of 63.8(c)(1),(c)(3),(c)(4)(ii), (c)(7) and (c)(8) will be maintained in the Environmental Control and/or Utilities Department. (63.7831(a)(4)).

(f.) Documentation for each CPMS that ongoing data QA procedures consistent with 40 CFR 63.8(d) will be maintained in the Utilities Department files. (63.7831(a)(5))

(g.) Documentation for each CPMS that ongoing record keeping and reporting procedures consistent with the general requirements of 40 CFR 63.10(c), (e)(1) and (e)(2)(i) will be maintained in the PI monitoring system Environmental Control Department and appropriate operating department files. (63.7831(a)(6))

(h.) Documentation that flow meters and pressure transmitters are installed, operated and maintained in accordance with manufacturer's specifications will be maintained in the Utilities Department files consistent with the requirements set forth in 63.7831(g).

1.3.3 Rationale for Measuring System Selection

(a.) Scrubber water flow rate provides an indication that the capture system is functional.

(b.) Pressure drop across the venturi indicates that the fan is providing flow from the capture system to the capture device.

(c.) Vessel isolation damper position indicates that the gas stream is moving from the correct vessel capture system to the capture device.

1.4 Startup, Shutdown and Malfunction Plans

1.4.1 Scope

The following process, particulate emission control and monitoring equipment used to comply with the standard are covered by this plan:

- Process Equipment
  - "F" BOP Vessel
  - "R" BOP Vessel
- Particulate emission capture systems
  - "F" BOP vessel emission capture system
  - "R" BOP vessel emission capture system
- Particulate emission control devices
  - "F" and "R" BOP venturi scrubber, pump and fan

- Monitoring Equipment
  - "F" BOP vessel venturi scrubber differential pressure transmitter
  - "F" BOP vessel venturi scrubber water flow transmitter
  - "R" BOP vessel venturi scrubber differential pressure transmitter
  - "R" BOP vessel venturi scrubber water flow transmitter

1.4.2 Plan Elements

(a.) Start-up

"Burning-in" a newly relined BOP vessel may cause excess emission from the BOP shop roof monitor.

The vessel isolation dampers have a born-in position (30 percent open).

(b.) Shutdown

Nothing identified.

(c.) Malfunction

- Malfunctions to the BOP Gas Cleaning System and capture device may occur during operations due to mechanical, electrical, or control failure (computer hardware and software).

- The BOP Gas Cleaning System Malfunction and Corrective Action Plan are included in ISO Procedure "*BOP Primary Operations" ID E-30600-07-006*, Section 4.0. and ISO Procedure "BOP Primary Scrubber System" ID E-76510-07-001, Section 4.0.

1.5 Plan Maintenance, Recordkeeping and Reporting

1.5.1 Initial plan requirements

- The Operation and Maintenance Plan, Site-Specific Monitoring Plan, and Startup, Shutdown and Malfunction Plan must be developed and implemented by May 22, 2006.
- Failure to meet any condition in a plan is a deviation and must be reported as such in the periodic deviation report.

1.5.2 Plan revisions

- Plans may be revised at any time provided you notify your permitting agency that you have done so in the next periodic Title V compliance certification.

1.5.3 Recordkeeping

- You must keep all current plans, superseded plans and all information necessary to demonstrate that you have complied with each plan requirement on-site for a period of at least 5 years. The first three years the information must be kept and the last two years information can be stored off-site.

1.5.4 Special Startup, Shutdown and Malfunction reporting requirement

- If, at any time, you fail to follow your Startup, Shutdown and Malfunction Plan during a startup, shutdown or malfunction event you must report that failure by telephone, FAX or E-Mail within 2 days following the deviation from the plan.
- You must also send a letter within 7 days following the end of the startup, shutdown or malfunction event, including the following information:
  - Your name and title
  - Certifying signature of the plant Responsible Official
  - How the startup, shutdown or malfunction event happened
  - What you did in response to the event
  - Reasons you did not follow your plan
  - Whether any regulated HAP emissions or monitored parameters were higher or different from their allowable values during the startup, shutdown or malfunction event.
  - Within 45 days of the end of the event, you must revise the plan to describe what you will do if the event occurs again.

Appendix A:

Operational Description of BOP Primary Emission Control System

1.0 INTRODUCTION

The intent of this document is to describe the equipment and operation of the Primary Gas Cleaning System for the BOP Shop at USS's Edgar Thomson Plant.

2.0 SYSTEM OVERVIEW

The primary emissions system is an open hood type system that is designed to capture and clean emissions generated during the steel production process. The capture system for each vessel includes separate water cooled hoods, hood sprays, isolation dampers, emergency stacks, and quenchers. The capture system combines in the collector main, and includes a common scupper, preconditioning sprays, and ductwork that are all located prior to the collection device. After the collecting device the capture system includes a gas cooler, mist eliminator, interconnecting ductwork, and two fans (one operating, one stand-by).
Only one vessel is blowing oxygen at a time so emissions are captured from one gas cleaning system at a time. Therefore, the gas cleaning system is operator selected to capture emissions from the appropriate vessel.

The capture system consists of a multi throat venturi scrubber or Kinpactor that removes particulate by the impacting of the particles with water droplets which removes the particulate from the gas stream. The pressure drop across the throats is controlled via throat dampers which are in turn are position controlled via a PLC. The pressure drop is monitored via two (2) redundant pressure transmitters, which provide the input for controlling the venturi throat damper position. Different scrubber pressure drop setpoints are utilized based on the percentage of the blow competed. Furnace draft is controlled via the fan setpoint.

3.0 DAMPER CONTROL

Isolation dampers are either open or closed depending upon the damper selected. Scrubber throat dampers are controlled dependent upon pressure drop.

4.0 MACT ALARMS

The following alarms are considered MACT alarms and require the reaction of the appropriate personnel.

Low Scrubber Water Flow
Low Scrubber Pressure Drop

These alarms will be annunciated in the Gas Cleaning Pulpit and at the Caster Water Quality Control Room.

Only the personnel in the Caster Water Quality Control Room can acknowledge the alarm. This person is also responsible for initiating the appropriate procedure to determine the cause of the alarm and initiate corrective action. The alarm in the other area is to ensure that the presence of an alarm condition is known and to ensure that the personnel in these areas notify the Caster Water personnel of an unacknowledged alarm.

5.0 MONITORING

The following parameters will be monitored by the local instrumentation coupled to the local PLC and the instantaneous readings will be electronically transferred to the PI monitoring system.

Scrubber pressure drop
Scrubber water flow
Isolation damper positions

Local instrumentation for measuring pressure drops and static pressures are pressure transmitters and flow is determined by measuring pressure loss with a transmitter across a known orifice plate. Vessel damper positions are measured using limit switches. All of the local instrumentation is connected to a PLC which is in turn networked into the PI system.

All MACT alarms and their time of acknowledgement will be on the PI monitoring system.

Pressure drops and flows will be averaged on an hourly basis with the hour being an hour of operation, not necessarily a clock hour.

Appendix B:

CPMS Documentation

Venturi Scrubber Differential Pressure Transmitter (Rosemount)
Venturi Scrubber Water Flow Transmitter (Orifice Plate w/ Rosemount Transmitter)

See Utilities Department files for additional information.

Appendix C:

Definitions

Control Device: A mechanical device with integral venturi and water sprays located at the end of the Capture System that entraps or entrains the fumes, dust and other non-gaseous pollutants generated by the BOP vessel under normal operating conditions.

Capture System: That equipment or devices including but not limited to hoods, air curtains, fans, ductwork and dampers used to capture and convey emissions generated by the BOP vessel to the Capture Device. The physical limits of the Capture System extend from the BOP vessel hood to the inlet flange of the Capture Device.

ESS: *Environmental Software System utilized to track, report and document environmental requirements.*

Malfunction: Any sudden, infrequent, and not reasonably prevented deviation in the process or a mechanical anomaly causing an upset condition where the maximum allowable emission levels of the Capture Device are exceeded or the Capture System fails to provide valid data to the monitoring system within the prescribed measurement ranges. Examples may include but are not limited to alarm conditions caused by: venturi scrubber failure, low venturi differential pressure, or fan motor failure.

PI A computer based process parameter monitoring system.

Primary Emissions Particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system.

Secondary Emissions Particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings and gaps or tears in ductwork to the primary emission control system.

Shutdown: The standard operational procedure (SOP) for removing a BOP Vessel from operation for reasons of inspection, maintenance or repair.

Startup: The standard operational procedure (SOP) for bringing a BOP Vessel back into operation after inspection, maintenance or repair.

D. BOP Fugitive Emissions System

1.1 Description of System During Production

1.2 Operation and Maintenance Plan

1.3 Process Specific Monitoring Plan

1.4 Startup, Shutdown and Malfunction Plan

1.5 Plan Maintenance, Record Keeping and Reporting

1.1 Description of Capture System During Production

The BOP Vessel Fugitive Emissions Baghouse collects the fugitive emissions from the "F" BOP and "R" BOP vessels by means of roof mounted ventilation dampers. In addition, hot metal charge emissions are collected via hoods located just above each vessel. These fugitive and charge emissions are directed toward the ductwork mounted to the outside roof of the building by the negative pressure from the baghouse ID fans. From the hood and ductwork, the induced draft fans convey the emissions to a ten (10) module Wheelabrator positive pressure pulse jet type baghouse. The gas stream is cleaned by impinging particulate matter on the outside of the filter media.

The bags in each module are periodically cleaned by means of high pressure air directed through a venturi mounted at the top of each individual bag. The dust, after being loosened from the bag exterior, falls into the module hopper.

1.2 Operation and Maintenance Plans

1.2.1 Scope

The following particulate emission capture systems and particulate emission control devices are covered by this plan:

- Fugitive emission capture systems
  - "F" BOP Vessel Fugitive Emissions Capture System
  - "R" BOP Vessel Fugitive Emissions Capture System

- Particulate emission control devices
  - "F" and "R" BOP Vessels Fugitive Emissions Baghouse

1.2.2 Equipment inspection of capture systems for "F" and "R" Fugitive Emissions Baghouse (63.7800(b)(1))

(a.) Equipment to be inspected:

Equipment	Inspecting Frequency	Inspecting Department	Recording Method	Regulatory Citation
Ductwork from roof to Isolation Dampers	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Ductwork from Isolation Dampers to Fan Inlets	Monthly	Utilities	Form No. E-76510-50-003	63.7800(b)(1)
Isolation Dampers and Actuators	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Baghouse Fan Integrity	Monthly	Utilities	*ESS*	63.7800(b)(1)
Charge Hood	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Ductwork from Charge Hood to Charge Dampers	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)
Charge Isolation Dampers, seals and Actuators	Monthly	BOP Maintenance	Form No. E-30600-45-001	63.7800(b)(1)

(b.) All deficiencies found during inspections listed in the above table such as holes, corrosion, deformation, broken drives or any other conditions affecting performance will be recorded on existing inspection forms. Corrective action will be completed before the next scheduled inspection.

1.2.3 Preventative Maintenance of Control Devices for "F" and "R" BOP Vessel Fugitive Emissions Baghouse (63.7800.(b)(2))

(a.) Refer to current baghouse inspection frequency as listed in ISO Procedure "Fugitive Baghouse" ID. E-76510-07-002 maintenance schedule in Section 3.0 of the ISO Environmental Procedure is consistent with good operating practice for routine or long term maintenance.

1.2.4 Operating Limits for "F" and "R" Fugitive Emissions Baghouse (63.7800(b)(3))

Operating Parameter	Monitoring Method	Recording Method	Averaging Frequency	Parameter Values	Regulatory Citation
Fan amps	Current Transducer	Electronic via PI	Hourly	305 for all 10 compartments	63.7800(b)(3)
Damper Position	Position Feedback Transmitter	Electronic via PI	N/A	Appendix A	63.7800(b)(3)

(a.) Description of capture system design and capture system in operation during production will be maintained in Appendix A. (63.7800(b)(3)(iii))

(b.) Rationale for why the parameter was chosen will be maintained in the Monitoring Plan. (63.7800(b)(3)(iii

(c.) Description of each selected operating limit parameter will be maintained in the Monitoring Plan. (63.7800(b)(3)(iii))

(d.) Description of the method used to monitor parameters in the above table. (63.7800(b)(3)(iii))

(e.) Data used to set the value or settings for the parameters of each process configuration will be maintained in the Environmental Control Department files. (63.7800(b)(3)(iii))

1.2.5 Bag Leak Detectors (63.7800(b)(4))

The Wheelabrator baghouse used for the capture of Casthouse emissions is a positive pressure type baghouse and is not required by this legislation to have bag leak detectors. (63.7830(b)(3)(i) and (ii))

1.3 Process Specific Monitoring Plans

1.3.1 Scope

The following continuous parametric monitoring systems (CPMS) are covered by this plan:

- "F" and "R" BOP Vessel Fugitive Emissions Baghouse fan amp
- "F" and "R" BOP Vessel Fugitive Emissions Baghouse damper actuator position

1.3.2 Plan Elements

(a.) For each CPMS, a site-specific monitoring plan must be incorporated and made available to the permitting authorities for each of the items prescribed as follows:

Measuring System	Monitoring Method	Recording Method	Averaging Frequency	Regulatory Citation
Fan amps	Current Transducer	Electronic via PI	Hourly	63.7831(a)
Damper Position	Position Feedback Transmitter	Electronic via PI	N/A	63.7831(a)

(b.) Documentation that each CPMS that sample probes and other interfaces are installed and located such that measurements are representative is maintained in *Engineering and/or Utilities Department files*. (63.7831(a)(1))

(c.) Documentation for each CPMS that the performance and equipment specifications for the sample interface, the parametric signal analyzer and the data collection and reduction system will be maintained in Appendix B. (63.7831.(a)(2))

(d.) Documentation of performance evaluation procedures and calibrations will be maintained in *Environmental and/or Utilities Department files*. (63.7831(a)(3))

(e.) Documentation of ongoing operation and maintenance procedures in accordance with the general requirements of 63.8(c)(1),(c)(3),(c)(4)(ii), (c)(7) and (c)(8) will be maintained in the *Utilities* Department. (63.7831(a)(4))

(f.) Documentation for each CPMS that ongoing data QA procedures consistent with 40 CFR 63.8(d). (Not applicable to this process) (63.7831(a)(5)).

(g.) Documentation for each CPMS that ongoing record keeping and reporting procedures consistent with the general requirements of 40 CFR 63.10(c), (e)(1) and (e)(2)(i) will be maintained in the PI monitoring system Environmental Control Department and appropriate operating department files. (63.7831(a)(6))

1.3.3 Rationale for Measuring System Selection

(a.) Monitoring of fan amperage provides an indication of flow rate, volume and pressure in the capture system.

(b.) Monitoring damper position provides an indication of flow from the capture system to the capture device

1.3.4 Inspections specific to baghouses

Baghouse Equipment	Inspection Frequency	Monitoring Method	Recording Method	Regulatory Citation
Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in Section 2.1 of the ISO Procedure "Fugitive Baghouse" ID E-76510-07-002.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)*(4)*
Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.	Weekly	Visual	Form No. E-76510-50-002	63.7830(b)*(4)*
Check the compressed air supply for pulse-jet baghouses.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)*(4)*
Monitor cleaning cycles to ensure proper operation using an appropriate methodology.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)*(4)*
Check bag cleaning mechanisms for proper functioning using an appropriate methodology.	Monthly	Visual	*ESS*	63.7830(b)*(4)*
Confirm the physical integrity of the baghouse through visual inspections of the baghouse interior for air leaks.	Quarterly	Visual	Work Order	63.7830(b)*(4)*

Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors or equivalent means.	Quarterly	Vibration Analysis	Report	63.7830(b)*(4)*

1.4 Startup, Shutdown and Malfunction Plans

1.4.1 Scope

The following process, particulate emission control and monitoring equipment used to comply with the standard are covered by this plan:

- Process Equipment
  - "F" BOP Vessel
  - "R" BOP Vessel
- Process Equipment Emission Capture Systems
  - "F" and "R" BOP vessel fugitive emission capture system
- Particulate emission control devices
  - "F" and "R" Fugitive Emissions Baghouse venturi scrubber, pump and fans
- Monitoring Equipment
  - "F" and "R" Fugitive Emissions Baghouse fan amps measuring system
  - "F" and "R" Fugitive Emissions Baghouse dampers position measuring system

1.4.2 Plan Elements

(a.) Start-up

Nothing identified.

(b.) Shutdown

Nothing identified.

(c.) Malfunction

- Malfunctions to the BOP Fugitive Baghouse and capture device may occur during operations due to mechanical, electrical, or control failure (computer hardware and software).

- The BOP Fugitive Baghouse Malfunction and Corrective Action Plan are included in ISO Procedure "Controlling BOP Air Emissions " ID E-30600-07-001, Section 4.0. and ISO Procedure "Fugitive Baghouse" ID E-76510-07-002, Section 4.0.

1.5 Plan Maintenance, Recordkeeping and Reporting

1.5.1 Initial plan requirements

- The Operation and Maintenance Plan, Site-Specific Monitoring Plan, and Startup, Shutdown and Malfunction Plan must be developed and implemented by May 22, 2006.
- Failure to meet any condition in a plan is a deviation and must be reported as such in the periodic deviation report.

1.5.2 Plan revisions

- Plans may be revised at any time provided you notify your permitting agency that you have done so in the next periodic Title V compliance certification.

1.5.3 Recordkeeping

- You must keep all current plans, superseded plans and all information necessary to demonstrate that you have complied with each plan requirement on-site for a period of at least 5 years. The first three years the information must be kept and the last two years information can be stored off-site.

1.5.4 Special Startup, Shutdown and Malfunction reporting requirement

- If, at any time, you fail to follow your Startup, Shutdown and Malfunction Plan during a startup, shutdown or malfunction event you must report that failure by telephone, FAX or E-Mail within 2 days following the deviation from the plan.
- You must also send a letter within 7 days following the end of the startup, shutdown or malfunction event, including the following information:
  - Your name and title
  - Certifying signature of the plant Responsible Official

- How the startup, shutdown or malfunction event happened
- What you did in response to the event
- Reasons you did not follow your plan
- Whether any regulated HAP emissions or monitored parameters were higher or different from their allowable values during the startup, shutdown or malfunction event.
- Within 45 days of the end of the event, you must revise the plan to describe what you will do if the event occurs again.

Appendix A:

Operational Description of BOP Fugitive Emissions System

1.0 INTRODUCTION

This document is intended to describe the fugitive emission system equipment and operation for the BOP Fugitive Emission System at the Edgar Thomson Plant.

2.0 SYSTEM OVERVIEW

The system is divided into the collection system and the control system. The collection system consists of sixteen (16) hood off-takes located in the furnace and charging isles of the BOP shop. The off-takes are arranged in two rows of eight (8) hoods. Each hood is connected directly to the main duct with a short piece of ductwork and is equipped with individual isolation dampers. In addition, there is a Hood located just above each vessel to collect hot metal charge emissions. The F Vessel Hood is connected to the main duct via two (2) ducts, and the R Vessel Hood is connected to the main duct via one (1) duct. Each Charge duct has an individual isolation damper located just before the main duct. The main duct is connected directly to the fan inlets via an inlet plenum.

The control system consists of a baghouse that collects and cleans emissions captured in the hood system.. The baghouse consists of ten (10) positive pressure compartments, each with its own separate fan and 250 HP motor.

Each compartment fan is equipped with an inlet and outlet isolation damper. The inlet damper is a simple mechanical blank off plate. The outlet damper is electrically operated to control fan motor current under normal operating conditions.

The main fans channel the *secondary and charge* emissions through the compartment filter bags and the cleaned air is passed out into the atmosphere. The dust and debris that accumulates on the outside of the bags are cleared by periodic cleaning to maintain adequate air flow.

There are five modes of operation for compartment cleaning. They are: **Differential Pressure, Continuous**, **Manual**, **High Differential Pressure**, and **Off**. The method of cleaning each module is accomplished by pulsing the filter bags with compressed air through solenoid-operated valves. Each module contains 30 solenoids, which will be energized in alternating pairs.

For the cleaning of the modules the baghouse uses a dedicated air compressor system with a dryer. The introduction of the compressed air into the filter bag dislodges the accumulated dust so it can fall into a hopper at the bottom of each compartment. Once the dust is at the bottom of the hopper, a continuously operated screw conveyor and rotary valve system discharges the dust to individual dust bins.

3.0 DAMPER CONTROL

The fugitive or roof emission system is used to capture charging emissions, fugitive blowing emissions, and any other emissions generated in the shop that would reach the roof in the shop charging or furnace isles. The BOP shop roof monitors are sealed and a duct with nineteen (19) dampered off-takes have been installed in the charge and furnace isles. Two (2) off-takes are connected to the F Vessel Charge Hood, and one (1) off-take is connected to the R Vessel Charge Hood. Damper position is based on shop operation and is controlled with digital outputs from a PLC. Damper position feedback is returned to the PLC.

A general description of the damper operation is as follows: The 16 fugitive roof dampers and 3 charging dampers are cycled to provide proper ventilation based on the different stages of the steel production cycle. During each stage the equivalent of 6 dampers are open providing the necessary flow to the baghouse which is determined by fan amps. However during the charging of hot metal, the total flow of the baghouse is applied to the operating vessel by having the charging damper(s) opened and all other system dampers closed. This operational sequence may vary based on seasonal fluctuations.

The fan outlet dampers are controlled by digital outputs from the control processor to open or close each damper. The process controller will control module fan amps by positioning the modules damper. The modules final amps will be with in 20 amps of the setpoint provided that the module can achieve the setpoint without the damper being opened a hundred percent. The control processor also controls the damper for cleaning a module. When the module goes into a cleaning cycle the processor will close the damper to allow for maximum cleaning of the bags.

4.0 MACT ALARMS

The following alarms are considered MACT alarms and require the reaction of the appropriate personnel.

Compartment No. 1 Low Amps
Compartment No. 2 Low Amps
Compartment No. 3 Low Amps
Compartment No. 4 Low Amps
Compartment No. 5 Low Amps
Compartment No. 6 Low Amps
Compartment No. 7 Low Amps
Damper 101 Open Position Failure
Damper 101Closed Position Failure
Damper 102 Open Position Failure
Damper 102 Closed Position Failure
Damper 103 Open Position Failure
Damper 103 Closed Position Failure
Damper 104 Open Position Failure

Damper 104 Closed Position Failure
Damper 105 Open Position Failure
Damper 105 Closed Position Failure
Damper 106 Open Position Failure
Damper 106 Closed Position Failure
Damper 107 Open Position Failure
Damper 107 Closed Position Failure
Damper 108 Open Position Failure
Damper 108 Closed Position Failure
Damper 109 Open Position Failure
Damper 109Closed Position Failure
Damper 110 Open Position Failure
Damper 110 Closed Position Failure
Damper 111 Open Position Failure
Damper 111 Closed Position Failure
Damper 112 Open Position Failure
Damper 112 Closed Position Failure
Damper 113 Open Position Failure
Damper 113 Closed Position Failure
Damper 114 Open Position Failure
Damper 114 Closed Position Failure
Damper 115 Open Position Failure
Damper 115 Closed Position Failure
Damper 116 Open Position Failure
Damper 116 Closed Position Failure

These alarms will be annunciated in both the Gas Cleaning Pulpit and the Caster Water Quality Control Room .

The trigger points for the Low Amperage Alarms are currently set at 305 amps for the entire Baghouse, as an hourly average.

Only the personnel in the Caster Water Quality Control Room can acknowledge the alarms. This person is also responsible for initiating the appropriate procedure to determine the cause of the alarm and initiate corrective action.

During a Charge, the Charge Damper/s for the Vessel being charged must be open, and all other system dampers must be closed. The BOP Melters Pulpit is responsible for monitoring of these conditions and ensuring the proper operation of the dampers is achieved during a hot metal charge.

5.0 MONITORING

The following parameters will be monitored by the local instrumentation coupled to the local PLC and the instantaneous readings will be electronically transferred to the PI

monitoring system. Alarms will be provided when a parameter is out of a preset range or minimum setpoint.

Individual compartment pressure drop
Individual compartment fan amperage
Hood damper positions
Cleaning air pressure

Local instrumentation for measuring pressures are typically pressure transmitters while fan amps are measured by current transducers. Damper positions are measured using potentiometers. All of the local instrumentation is connected to a PLC which is in turn networked into the PI system.

All MACT alarms and their time of acknowledgement will be on the PI monitoring system.

Pressure drop and fan amperage will be averaged on an hourly basis with the hour being an hour of operation, not necessarily a clock hour.

The BOP Melters Pulpit is responsible for monitoring the system dampers to ensure proper operation during a hot metal charge, i.e. vessel charge damper open and all other system dampers closed.

Appendix B:

CPMS Documentation:

- Ohio Semitronics, Inc. Single-Phase AC Current Transducer Installation and Operating Instructions.

MCT5 SINGLE PHASE AC CURRENT TRANSDUCER

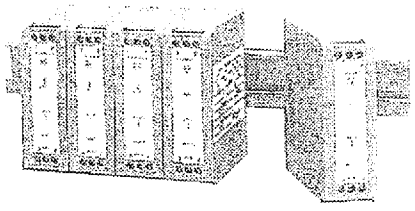
DIN RAIL MOUNTED AC CURRENT TRANSDUCER
0.25% ACCURACY

FEATURES

- Ruggedized Polyamide DIN mount case.
- Slim profile allows maximum use of available space.
- Field selectable analog outputs.
- Recessed terminals provide increased safety.

APPLICATIONS

- Ideal for use in enclosures with dimensional constraints.
- Designed for industrial environments.
- OEM measurement systems.
- Designed for use with OSI current transformers.
- Easily integrated into control systems.



Transducer output is derived from the average absolute value of the input and calibrated as the RMS value of a sine wave input.

*Models are self-powered from measured AC input line with DIP switch selectable 0-1mA, 0-5Vdc, or 0-10Vdc output.
**Denotes 4-20mA loop-powered unit, (15-40Vdc).
All other units require 85-135 Vac instrument power.

INPUT	STANDARD OUTPUTS MODEL MCT5-		
AC AMPS	0-1mAdc*	4-20mAdc	4-20mAdc**
0 to 1.0	001A	001E	001E2
0 to 5.0	005A	005E	005E2

ORDERING INFORMATION

Example: 0-5A Input with 4-20mA Output.
MCT5 - 005E

5 YEAR WARRANTY

c UL us LISTED

Measuring Equipment 7N93

SPECIFICATIONS

INPUT

Current ..... See Table
Frequency Range ..... 48 to 65Hz.; 60Hz. Nom.
Burden ..... 1 Amp models 0.05VA
5 Amp models 0.175VA
Current Overload
2 X F.S. rating ..... (continuous)
10 X F.S. rating ..... (10Sec./Hr.)
Dielectric Test...(Input/Output) 1500Vac

OUTPUT

Ripple ..... < 1.0% F.S.
Response ..... (99%) ..... 400 milliseconds
Field Adjustable Span ..... ± 5%

OUTPUT LOADING (Ohms)

4-20mA 0-500
4-20mA ..... (24V Loop Power) 0-600
0-1mA 0-10k
0-5Vdc ..... > 5M
0-10Vdc ..... > 10M

ACCURACY ..... ±0.25% F.S.@ 60Hz
Includes effects of linearity and setpoint.
Temperature Effect ..... (-20°C to +65°C) ..... ± 1.0%
E Output ..... (-20°C to +40°C) ..... ± 1.0%
Instrument Power 85-135Vac, 50-60Hz, 3VA
Loop Powered 15-40Vdc
Termination ..... Wire size 22 to 12 AWG
Net Weight ..... 0.4 Lb.

CONNECTION DIAGRAMS AND DIMENSIONS SHOWN ON NEXT PAGE

(Consult factory for availability of DIN rail)

OHIO SEMITRONICS, INC.
4242 REYNOLDS DRIVE * HILLIARD, OHIO * 43026-1264
PHONE: (614) 777-1005 * FAX: (614) 777-4511
WWW.OHIOSEMITRONICS.COM * 1-800-537-6732

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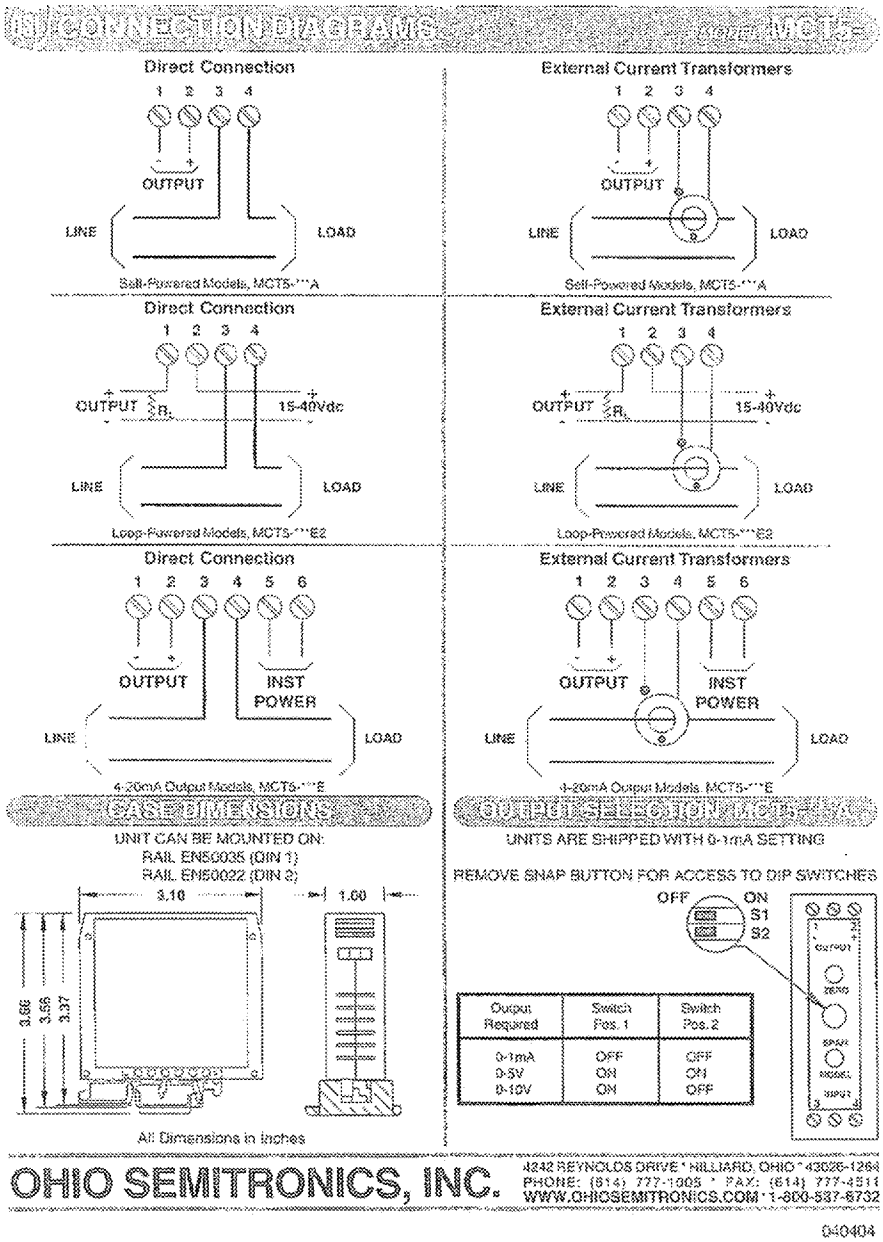

INSTALLATION INSTRUCTIONS

1. Installation should be performed by qualified electricians only!
2. Make sure electrical service is disconnected before making any electrical connections.
3. Branch circuit protection is required to be provided in accordance with the National and Local codes of the inspection authority.
4. Route wires as required and secure to terminals per connection diagram on this sheet and on the unit.

OPERATING INSTRUCTIONS

1. This unit is intended for indoor use at altitudes up to 2000 meters.
2. Transient overvoltages according to Installation Category (overvoltage category)II, pollution Degree 2.
3. The output signal is intended to be "Not accessible to the user." To prevent contact with live circuits, the transducer is required to be mounted in an enclosure that requires the use of a tool for access.
4. If cleaning of the exterior surface is necessary, de-energize all services of supply (both measuring and instrument power circuits) and brush with a soft brush or blow off with low pressure air. Use appropriate eye protection. Not suitable for hose-down cleaning.
5. Maximum relative humidity 80 percent for temperatures up to 31°C decreasing linearly to 50 percent relative humidity at 40°C.
6. Maximum operating temperature range is -20°C to 65°C (-20°C to 40°C for "E" suffix models).

WARRANTY STATEMENT

Ohio Semitronics, warrants this unit to be free of defects in material and workmanship for a period of five years from date of shipment. This unit must not be used in any manner other than as specified in this document.

OHIO SEMITRONICS, INC.
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Appendix C:

Definitions

Control Device: A mechanical device with integral filter media located at the end of the Capture System that entraps or entrains the fumes, dust and other non-gaseous pollutants generated by the BOP vessel(s) under normal operating conditions.

Capture System: That equipment or devices including but not limited to hoods, fans, ductwork and dampers used to capture and convey emissions generated by the BOP vessels to the Capture Device. The physical limits of the Capture System extend from the BOP Charging Hoods to the inlet flange of the Capture Device.

ESS: *Environmental Software System utilized to track, report and document environmental requirements.*

Malfunction: Any sudden, infrequent, and not reasonably prevented deviation in the process or a mechanical anomaly causing an upset condition where the maximum allowable emission levels of the Capture Device are exceeded or the Capture System fails to provide valid data to the monitoring system within the prescribed measurement ranges. Examples may include but are not limited to alarm conditions caused by: filter cleaning system failure (including insufficient air pressure), damper actuator failure, fan motor failure and breaking of a fan belt or fan belt slippage. Although not alarmed conditions, baghouse filter media leakage and conveyor failure are also considered to be *malfunctions.*

PI A computer based process parameter monitoring system.

Primary Emissions Particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system.

Secondary Emissions Particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings and gaps or tears in ductwork to the primary emission control system.

Shutdown: The standard operational procedure (SOP) for removing a BOP vessel from operation for reasons of inspection, maintenance or repair.

Startup: The standard operational procedure (SOP) for bringing a BOP vessel back into operation after inspection, maintenance or repair.

E. LMF Emissions System

1.1 Description of System During Production

1.2 Operation and Maintenance Plan

1.3 Process Specific Monitoring Plan

1.4 Startup, Shutdown and Malfunction Plan

1.5 Plan Maintenance, Record Keeping and Reporting

1.1 Description of Capture System During Production

The LMF Emissions Baghouse collects the emissions from the LMF vessel by means of a hood that is located at the LMF vessel *and emissions from the LMF flux handling system via a series of ductwork*. The emissions are directed toward the ductwork by the negative pressure from the baghouse ID fans. From the hood and ductwork, the induced draft fans convey the emissions to a spark arrestor and then on to a *six (6)* module Wheelabrator negative pressure pulse jet type baghouse. The gas stream is cleaned by impinging particulate matter on the outside of the filter media. After cleaning, the gas stream is released to the atmosphere by means of a dedicated ID fan located at the outlet of each baghouse module.

The bags in each module are periodically cleaned by means of high pressure air directed through a venturi mounted at the top of each individual bag. The dust, after being loosened from the bag exterior, falls into the module hopper.

1.2 Operation and Maintenance Plans

1.2.1 Scope

The LMF does not require an O&M Plan for the capture system in accordance with 63.7800(b).

1.3 Process Specific Monitoring Plans

1.3.1 Scope

The following continuous parametric monitoring systems (CPMS) are covered by this plan:

- LMF Emissions Baghouse bag leak detector

1.3.2 Plan Elements

(a.) Documentation that the bag leak detection system has been installed, operates and is maintained according to the requirements of paragraphs (f)(1) through (f)(7) of 40 CFR 63.7831 is maintained in the Engineering, Utilities and/or Environmental Control Departments. (63.7831(f)(1)-(7)).

(a.) Documentation that the bag leak detector is capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less will be maintained in Appendix B. (63.7831(f)(1)).

(c.) The bag leak detection system is installed operated and maintained in accordance with "Fabric Filter Bag Leak Detection Guidance" EPA-454/R-98-015, September 1997 or and/or in accordance with manufacturer's instructions. This documentation will be kept in the Engineering and/or Utilities Department files. (63.7831(f)(4)).

(d) The alarm set points and delay time documentation will be kept in the Engineering Department files. (63.7831(f)(5)).

(e.) All documentation pertaining to the adjustment of the bag leak detection system will be kept in the Environmental Control Department files. (63.7831(f)(6)).

1.3.3 Inspection specific to baghouses

Baghouse Equipment	Inspection Frequency	Monitoring Method	Recording Method	Regulatory Citation
Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in Section 2.1 of the ISO Procedure "LMF Baghouse" ID E-76560-07-001.	Daily	Visual	Form No. E-76560-50-001	63.7830(b)*(4)*
Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.	Weekly	Visual	Form No E-76560-50-001	63.7830(b)*(4)*
Check the compressed air supply for pulse-jet baghouses.	Daily	Visual	Form No. E-76560-50-001	63.7830(b)*(4)*
Monitor cleaning cycles to ensure proper operation using an appropriate methodology.	Daily	Visual	Form No. E-76560-50-001	63.7830(b)(4)
Check bag cleaning mechanisms for proper functioning using an appropriate methodology.	Monthly	Visual	*ESS*	63.7830(b)*(4)*

Confirm the physical integrity of the baghouse through visual inspections of the baghouse interior for air leaks.	Quarterly	Visual	Work Order	63.7830(b)*(4)*
Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors or equivalent means.	Quarterly	Vibration Analysis	Report	63.7830(b)*(4)*

1.4 Startup, Shutdown and Malfunction Plans

1.4.1 Scope

The following process, particulate emission control and monitoring equipment used to comply with the standard are covered by this plan:

- Process Equipment
  - LMF
- Particulate emission control devices
  - LMF Emissions Baghouse hoods, dampers, ductwork, and fans
- Monitoring Equipment
  - LMF Emissions Baghouse bag leak detection system

1.4.2 Plan Elements

(a.) Start-up

Nothing identified

(b.) Shutdown

Nothing identified.

(c.) Malfunction

- Malfunctions to the LMF Baghouse and capture device may occur during operations due to mechanical, electrical, or control failure (computer hardware and software).

- The LMF Baghouse Malfunction and Corrective Action Plan are included in ISO Procedure "LMF Baghouse" ID E-76560-07-001, Section 4.0.

1.5. Plan Maintenance, Recordkeeping and Reporting

1.5.1 Initial plan requirements

- The Operation and Maintenance Plan, Site-Specific Monitoring Plan, and Startup, Shutdown and Malfunction Plan must be developed and implemented by May 22, 2006.
- Failure to meet any condition in a plan is a deviation and must be reported as such in the periodic deviation report.

1.5.2 Plan revisions

- Plans may be revised at any time provided you notify your permitting agency that you have done so in the next periodic Title V compliance certification.

1.5.3 Recordkeeping

- You must keep all current plans, superseded plans and all information necessary to demonstrate that you have complied with each plan requirement on-site for a period of at least 5 years. The first three years the information must be kept and the last two years information can be stored off-site.

1.5.4 Special Startup, Shutdown and Malfunction reporting requirement

- If, at any time, you fail to follow your Startup, Shutdown and Malfunction Plan during a startup, shutdown or malfunction event you must report that failure by telephone, FAX or E-Mail within 2 days following the deviation from the plan.
- You must also send a letter within 7 days following the end of the startup, shutdown or malfunction event, including the following information:
  - Your name and title
  - Certifying signature of the plant Responsible Official
  - How the startup, shutdown or malfunction event happened

- What you did in response to the event
- Reasons you did not follow your plan
- Whether any regulated HAP emissions or monitored parameters were higher or different from their allowable values during the startup, shutdown or malfunction event.
- Within 45 days of the end of the event, you must revise the plan to describe what you will do if the event occurs again.

Appendix A:

Operational Description of the LMF Emissions System

1.0 INTRODUCTION

This document is intended to describe the emission system equipment and operation for the Ladle Metallurgy Facility (LMF) at the Edgar Thomson Plant.

2.0 SYSTEM OVERVIEW

The system is divided into the capture system and the control system. The collection system consists of a close coupled hood at the LMF, ductwork, isolation damper, and spark box. The system also provides ventilation for the flux handling system.

The control system consists of a *six (6)* module baghouse that controls emissions generated at the LMF. Each module is equipped with an individual fan and motor located on the clean (suction) side of the baghouse. Each fan discharges the clean gases directly to the atmosphere via an individual stack. *The LMF Baghouse and capture system was upgraded in 2010. Two (2) additional modules were installed, and, a portion of the inlet duct from the hood to the Baghouse, including the spark box, was increased in size. In addition, the 4 existing belt drive motors were replaced with direct drive motors. The 2 new modules and belt drive motors are identical to the current modules and motors.*

Each compartment is equipped with an inlet isolation damper that isolates the compartment for cleaning. Cleaning is either based on time or module pressure drop. Cleaning is by reverse pulse jet with one module at a time being taken off line by automatically closing the module inlet damper. For the cleaning of the modules the baghouse uses the plant air supply. The introduction of the compressed air into the filter bag dislodges the accumulated dust so it can fall into a hopper at the bottom of each compartment. Once the dust is at the bottom of the hopper, a continuously operated rotary valve that feeds a screw conveyor system that discharges in a dust box. The dust boxes are visually checked periodically and emptied upon operator discretion.

3.0 DAMPER CONTROL

The damper control for this operation is straight forward. The isolation damper at the LMF is opened when the LMF is in operation and is closed when the system is not in operation.

4.0 MACT ALARMS

The following alarms are considered MACT alarms and require the reaction of the appropriate personnel.

Compartment No. 1 Bag Leak Detector Alarm
Compartment No. 2 Bag Leak Detector Alarm
Compartment No. 3 Bag Leak Detector Alarm
Compartment No. 4 Bag Leak Detector Alarm
Compartment No. 5 Bag Leak Detector Alarm
Compartment No. 6 Bag Leak Detector Alarm

These alarms will be annunciated in the Gas Cleaning Pulpit Room, the LMF Pulpit and at the Caster Water Quality Control Room.

Only the personnel in the Caster Water Quality Control Room can acknowledge the alarm. This person is also responsible for initiating the appropriate procedure to determine the cause of the alarm and initiate corrective action. The alarm in the other areas is to ensure that the presence of an alarm condition is known and to ensure that the personnel in these areas notify the Caster Water personnel of an unacknowledged alarm.

5.0 MONITORING

Broken bag detectors are provided for each module. Detectors are loop powered units connected directly to the baghouse PLC. PLC programming records the signals and determines the alarm outputs. All alarms are transmitted electronically to the PI system and are time stamped. The detectors have been installed and operated in accordance with the manufacturer recommendations.

Additionally, the following parameters will be monitored by the local instrumentation and instantaneous readings will be electronically transferred to the PI system via the Baghouse PLC. Alarms will be provided when a parameter is out of a preset range or minimum setpoint.

Individual compartment pressure drop
Individual compartment fan amperage
Isolation damper positions
Cleaning air pressure

All MACT alarms and their time of acknowledgement will be on the PI monitoring system.

Pressure drop and fan amperage will be averaged on an hourly basis with the hour being an hour of operation, not necessarily a clock hour.

Appendix B:

CPMS Documentation:

- Ohio Semitronics, Inc. Single-Phase AC Current Transducer Installation and Operating Instructions.
- *Certificate of Compliance for Auburn TRIBO.d^2, Model 3400 Bag Leak Detector*
- Bag Leak Detection System Operation and Maintenance Manual

MULTIPLE-PHASE AC CURRENT TRANSDUCER

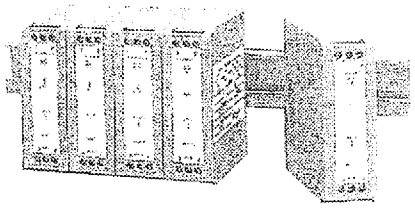
DIN RAIL MOUNTED AC CURRENT TRANSDUCER
0.25% ACCURACY

FEATURES

- Ruggedized Polyamide DIN mount case.
- Slim profile allows maximum use of available space.
- Field selectable analog outputs.
- Recessed terminals provide increased safety.

APPLICATIONS

- Ideal for use in enclosures with dimensional constraints.
- Designed for industrial environments.
- OEM measurement systems.
- Designed for use with OSI current transformers.
- Easily integrated into control systems.



Transducer output is derived from the average absolute value of the input and calibrated as the RMS value of a sine wave input.

*Models are self-powered from measured AC input line with DIP switch selectable 0-1mA, 0-5Vdc, or 0-10Vdc output.
**Denotes 4-20mA loop-powered unit, (15-40Vdc).
All other units require 85-135 Vac instrument power.

INPUT	STANDARD OUTPUTS MODEL MCT5-		
AC AMPS	0-1mAdc*	4-20mAdc	4-20mAdc**
0 to 1.0	001A	001E	001E2
0 to 5.0	005A	005E	005E2

ORDERING INFORMATION

Example: 0-5A Input with 4-20mA Output.
MCT5 - 005E

5 YEAR WARRANTY

c UL us LISTED

Measuring Equipment 7N93

SPECIFICATIONS

INPUT

Current ..... See Table
Frequency Range ..... 48 to 65Hz.; 60Hz. Nom.
Burden ..... 1 Amp models 0.05VA
5 Amp models 0.175VA
Current Overload
2 X F.S. rating ..... (continuous)
10 X F.S. rating ..... (10Sec./Hr.)
Dielectric Test...(Input/Output) 1500Vac

OUTPUT

Ripple ..... < 1.0% F.S.
Response ..... (99%) ..... 400 milliseconds
Field Adjustable Span ..... ± 5%

OUTPUT LOADING (Ohms)

4-20mA 0-500
4-20mA ..... (24V Loop Power) 0-600
0-1mA 0-10k
0-5Vdc ..... > 5M
0-10Vdc ..... > 10M

ACCURACY ..... ±0.25% F.S.@ 60Hz
Includes effects of linearity and setpoint.
Temperature Effect ..... (-20°C to +65°C) ..... ± 1.0%
E Output ..... (-20°C to +40°C) ..... ± 1.0%
Instrument Power 85-135Vac, 50-60Hz, 3VA
Loop Powered 15-40Vdc
Termination ..... Wire size 22 to 12 AWG
Net Weight ..... 0.4 Lb.

CONNECTION DIAGRAMS AND DIMENSIONS SHOWN ON NEXT PAGE

(Consult factory for availability of DIN rail)

OHIO SEMITRONICS, INC.
4242 REYNOLDS DRIVE * HILLIARD, OHIO * 43026-1264
PHONE: (614) 777-1005 * FAX: (614) 777-4511
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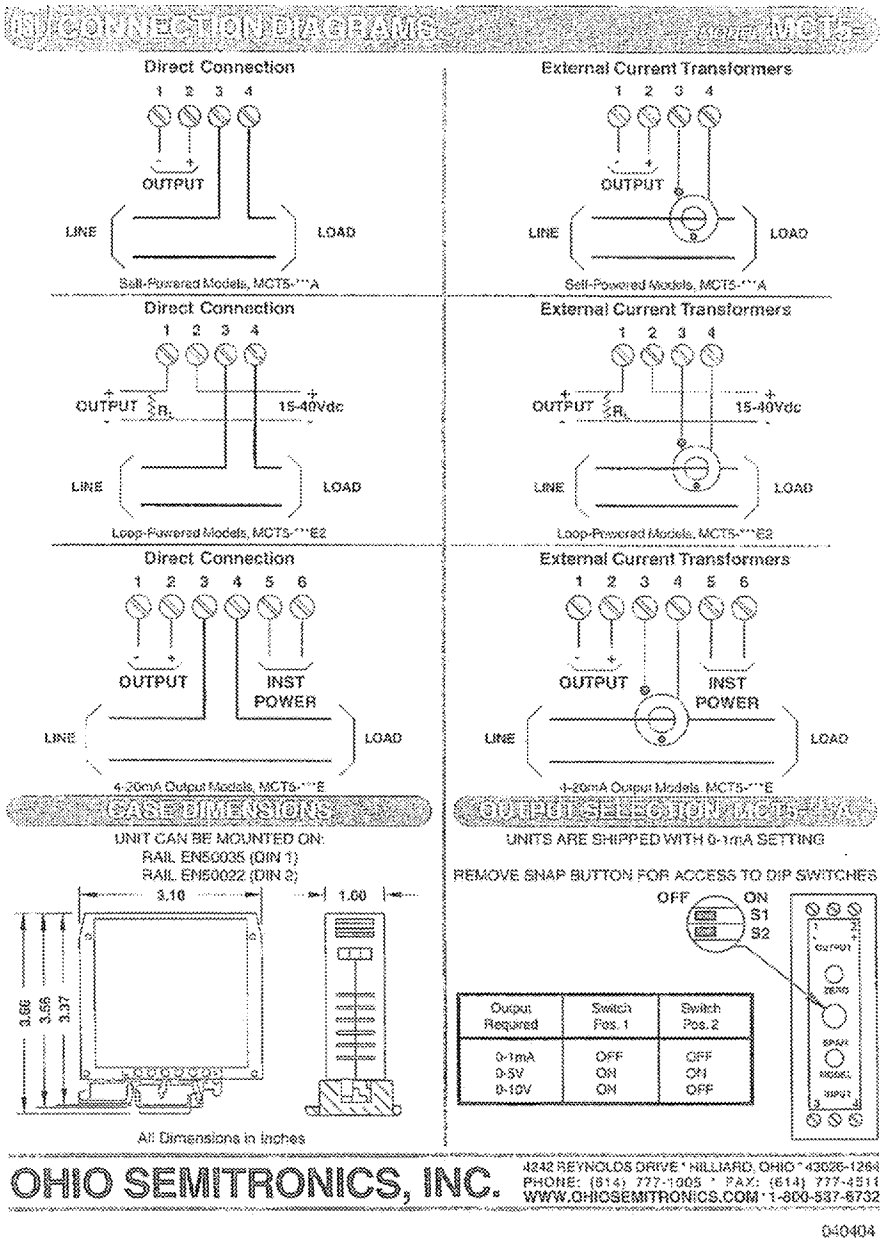


auburn SYSTEMS
8 Electronics Ave Danvers, MA 01923 Tel: (978) 777-2460 Fax: (978) 777-8820 e-mail: sales@auburnsys.com

CERTIFICATE OF COMPLIANCE

CUSTOMER:	US Steel – ET Plant
PRODUCT:	TRIBO.d^2 , Model 3400

This certifies that the TRIBO.d^2 , Model 3400, has been tested and found to be in conformance with federal regulation 40 CFR 63, section 63.1350, paragraph (m) which states: The BLDS must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

Robert E. Newton

Auburn Systems
Product Development Manager,
Triboelectric Systems

Appendix C:

Definitions

Control Device: A mechanical device with integral filter media with ID fans located at the end of the Capture System that entraps or entrains the fumes, dust and other non-gaseous pollutants generated by the LMF vessel under normal operating conditions.

Capture System: That equipment or devices including but not limited to hoods, fans, ductwork and dampers used to capture and convey emissions generated by the LMF vessel to the Capture Device. The physical limits of the Capture System extend from the LMF Hood to the inlet flange of the Capture Device.

ESS: *Environmental Software System utilized to track, report and document environmental requirements.*

Malfunction: Any sudden, infrequent, and not reasonably prevented deviation in the process or a mechanical anomaly causing an upset condition where the maximum allowable emission levels of the Capture Device are exceeded or the Capture System fails to provide valid data to the monitoring system within the prescribed measurement ranges. Examples may include but are not limited to alarm conditions caused by: baghouse filter media leakage, filter cleaning system failure (including insufficient air pressure), damper actuator failure, fan motor failure and breaking of a fan belt or fan belt slippage. Although not an alarmed condition, conveyor failure is also considered to be a *malfunction.*

Primary Emissions Particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system.

Secondary Emissions Particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings and gaps or tears in ductwork to the primary emission control system.

Shutdown: The standard operational procedure (SOP) for removing a LMF vessel from operation for reasons of inspection, maintenance or repair.

Startup: The standard operational procedure (SOP) for bringing a LMF vessel back into operation after inspection, maintenance or repair.

F. Mixer Emissions System

1.1 Description of System During Production

1.2 Operation and Maintenance Plan

1.3 Process Specific Monitoring Plan

1.4 Startup, Shutdown and Malfunction Plan

1.5 Plan Maintenance, Record Keeping and Reporting

1.1 Description of Capture System During Production

The Mixer Baghouse collects the emissions from the torpedo car when it discharges molten metal into the mixer or directly into a ladle at the wild mouse by means of a local hood. A moveable hood captures emissions generated during pouring from the mixer to the ladle and desulfurization in the ladle. The emissions are directed toward the ductwork by the negative pressure from the baghouse ID fans. From the hood and ductwork, the induced draft fans convey the emissions to a spark arrestor and then on to a twelve (12) module Wheelabrator negative pressure pulse jet type baghouse. The gas stream is cleaned by impinging particulate matter on the outside of the filter media. After cleaning, the gas stream is released to the atmosphere by means of a dedicated ID fan located at the outlet of each baghouse module.

The bags in each module are periodically cleaned by means of high pressure air directed through a venturi mounted at the top of each individual bag. The dust, after being loosened from the bag exterior, falls into the module hopper.

1.2 Operation and Maintenance Plans

1.2.1 Scope

The Mixer does not require an O&M Plan in accordance with 63.7800(b).

1.3 Process Specific Monitoring Plans

1.3.1 Scope

The following continuous parametric monitoring systems (CPMS) are covered by this plan:

- Mixer Emissions Baghouse bag leak detector

1.3.2 Plan Elements

(a.) Documentation that the bag leak detection system has been installed, operates and is maintained according to the requirements of paragraphs (f)(1) through (f)(7) of 40 CFR 63.7831 is maintained in the Engineering, Utilities and/or Environmental Control Departments. (63.7831(f)(1)-(7)).

(b.) Documentation that the bag leak detector is capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less will be maintained in Appendix B. (63.7831(f)(1)).

(c.) The bag leak detection system is installed operated and maintained in accordance with "Fabric Filter Bag Leak Detection Guidance" EPA-454/R-98-015, September 1997 or and/or in accordance with manufacturer's instructions. This documentation will be kept in the Engineering and/or Utilities Department files. (63.7831(f)(4)).

(d) The alarm set points and delay time documentation will be kept in the Engineering Department files. (63.7831(f)(5)).

(e.) All documentation pertaining to the adjustment of the bag leak detection system will be kept in the Environmental Control Department files. (63.7831(f)(6)).

1.3.3 Inspections specific to baghouses

Baghouse Equipment	Inspection Frequency	Monitoring Method	Recording Method	Regulatory Citation
Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in Section 2.1 of the ISO Procedure "Mixer Baghouse" ID E-76510-07-003.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)(1)
Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.	Weekly	Visual	Form No. E-76510-50-002	63.7830(b)(2)
Check the compressed air supply for pulse-jet baghouses.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)(3)
Monitor cleaning cycles to ensure proper operation using an appropriate methodology.	Daily	Visual	Form No. E-76510-50-002	63.7830(b)(4)

Check bag cleaning mechanisms for proper functioning using an appropriate methodology.	Monthly	Visual	*ESS*	63.7830(b)(5)
Confirm the physical integrity of the baghouse through visual inspections of the baghouse interior for air leaks.	Quarterly	Visual	Work Order	63.7830(b)(7)
Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors or equivalent means.	Quarterly	Vibration Analysis	Report	63.7830(b)(8)

1.4 Startup, Shutdown and Malfunction Plans

1.4.1 Scope

The following process, particulate emission control and monitoring equipment used to comply with the standard are covered by this plan:

- Process Equipment
  - Mixer, Wild Mouse (from Torpedo Car to Ladle), Emergency Pit (Flame Suppression System)

- Particulate emission control devices
  - Mixer Emissions Baghouse hoods, dampers, ductwork, and fans

- Monitoring Equipment
  - Mixer Emissions Baghouse fan amps measuring system
  - Mixer Emissions Baghouse dampers position measuring system
  - Mixer Emissions Baghouse bag leak detection system

1.4.2 Plan Elements

(a.) Start-up

Initial "burn-in" of re-lined mixer may cause high particulate emissions in the shop.

(b.) Shutdown

Nothing identified.

(c.) Malfunction

- Malfunctions to the Mixer Baghouse and capture device may occur during operations due to mechanical, electrical, or control failure (computer hardware and software).

- The Mixer Baghouse Malfunction and Corrective Action Plan are included in ISO Procedure "Mixer Baghouse" ID E-76510-07-003, Section 4.0.

1.5 Plan Maintenance, Recordkeeping and Reporting

1.5.1 Initial plan requirements

- The Operation and Maintenance Plan, Site-Specific Monitoring Plan, and Startup, Shutdown and Malfunction Plan must be developed and implemented by May 22, 2006.
- Failure to meet any condition in a plan is a deviation and must be reported as such in the periodic deviation report.

1.5.2 Plan revisions

- Plans may be revised at any time provided you notify your permitting agency that you have done so in the next periodic Title V compliance certification.

1.5.3 Recordkeeping

- You must keep all current plans, superseded plans and all information necessary to demonstrate that you have complied with each plan requirement on-site for a period of at least 5 years. The first three years the information must be kept and the last two years information can be stored off-site.

1.5.4 Special Startup, Shutdown and Malfunction reporting requirement

- If, at any time, you fail to follow your Startup, Shutdown and Malfunction Plan during a startup, shutdown or malfunction event you must report that failure by telephone, FAX or E-Mail within 2 days following the deviation from the plan.

- You must also send a letter within 7 days following the end of the startup, shutdown or malfunction event, including the following information:
  - Your name and title
  - Certifying signature of the plant Responsible Official
  - How the startup, shutdown or malfunction event happened
  - What you did in response to the event
  - Reasons you did not follow your plan
  - Whether any regulated HAP emissions or monitored parameters were higher or different from their allowable values during the startup, shutdown or malfunction event.
  - Within 45 days of the end of the event, you must revise the plan to describe what you will do if the event occurs again.

Appendix A:

Operational Description of Mixer Emissions System

1.0 INTRODUCTION

This document is intended to describe the emission system equipment and operation for the BOP Mixer Area at the Edgar Thomson Plant. The Mixer area encompasses the transfer of hot metal to the mixer from the torpedo car, the transfer of hot metal from the mixer to the charging ladle and the desulfurization of the hot metal in the charging ladle. Additionally, also included is the direct pour station that allows the transfer of hot metal directly from the torpedo car into the charging ladle.

2.0 SYSTEM OVERVIEW

The system is divided into the capture system and the control system. The capture system consists of fixed hoods to capture emissions at the torpedo car to mixer pour station and the direct pour station (wild mouse). A movable hood is utilized to capture emissions generated during the transfer of hot metal from the mixer to the ladle and during the desulfurization process. Volume is directed to the appropriate process via control dampers in the ductwork.

Interconnecting ductwork connects the hoods to a cyclonic separator to remove incendiary particles prior to the baghouse.

The control system consists of a 12 module baghouse that controls emissions from all sources listed above. Each module is equipped with an individual fan and motor located on the clean (suction) side of the baghouse. Each fan discharges the clean gases directly to the atmosphere via an individual stack.

Each compartment is equipped with an inlet isolation damper that isolates the compartment for cleaning. Cleaning is either based on time or module pressure drop. Cleaning is by reverse pulse jet with one module at a time being taken off line by automatically closing the module inlet damper. For the cleaning of the modules the baghouse uses the plant air supply. The introduction of the compressed air into the filter bag dislodges the accumulated dust so it can fall into a hopper at the bottom of each compartment. Once the dust is at the bottom of the hopper, a continuously operated rotary valve directs the dust and debris into dustbins located directly below each hopper. The individual dustbins are visually checked periodically and emptied upon operator discretion.

3.0 DAMPER CONTROL

The positions of the dampers at the mixer will be monitored to determine that they are in the right position for the current operation. The damper controls are on the Hood Damper Control Panel. The required damper position for each operation is show below.

HOOD DAMPER CONTROL PANEL

Operation	**Required Damper Position**			
	SOUTH MOVEABLE HOOD	TORPEDO LADLE TO WILD MOUSE	NORTH MOVEABLE HOOD	TORPEDO LADLE TO MIXER
Pour from torpedo ladle to mixer	CLOSED	CLOSED	CLOSED	OPEN
Pour from torpedo ladle to wild mouse	CLOSED	OPEN	CLOSED	CLOSED
Pour from mixer to ladle	CLOSED	CLOSED	OPEN	CLOSED
Desulfurization (north pit)	CLOSED	CLOSED	OPEN	CLOSED
Desulfurization (south pit)	OPEN	CLOSED	CLOSED	CLOSED

Local alarming is provided to alert the operator that the appropriate damper is not in the correct position for the operation being performed.

4.0 MACT ALARMS

The following alarms are considered MACT alarms and require the reaction of the appropriate personnel.

Compartment No. 1 Bag Leak Detector Alarm
Compartment No. 2 Bag Leak Detector Alarm
Compartment No. 3 Bag Leak Detector Alarm
Compartment No. 4 Bag Leak Detector Alarm
Compartment No. 5 Bag Leak Detector Alarm
Compartment No. 6 Bag Leak Detector Alarm
Compartment No. 7 Bag Leak Detector Alarm
Compartment No. 8 Bag Leak Detector Alarm
Compartment No. 9 Bag Leak Detector Alarm
Compartment No. 10 Bag Leak Detector Alarm
Compartment No. 11 Bag Leak Detector Alarm
Compartment No. 12 Bag Leak Detector Alarm

These alarms will be annunciated in the Gas Cleaning Pulpit Room and at the Caster Water Quality Control Room.

Only the personnel in the Caster Water Quality Control Room can acknowledge the alarm. This person is also responsible for initiating the appropriate procedure to determine the cause of the alarm and initiate corrective action. The alarm in the other area is to ensure that the presence of an alarm condition is known and to ensure that the personnel in these areas notify the Caster Water personnel of an unacknowledged alarm.

5.0 MONITORING

Broken bag detectors are provided for each module. Detectors are loop powered units connected directly to the baghouse PLC. PLC programming records the signals and determines the alarm outputs. All alarms are transmitted electronically to the PI system and are time stamped. The detectors have been installed and operated in accordance with the manufacturer recommendations.

Additionally, the following parameters will be monitored by the local instrumentation and instantaneous readings will be electronically transferred to the PI system via the baghouse PLC. Alarms will be provided when a parameter is out of a preset range or minimum setpoint.

Individual compartment pressure drop
Individual compartment fan amperage
Isolation damper positions
Cleaning air pressure

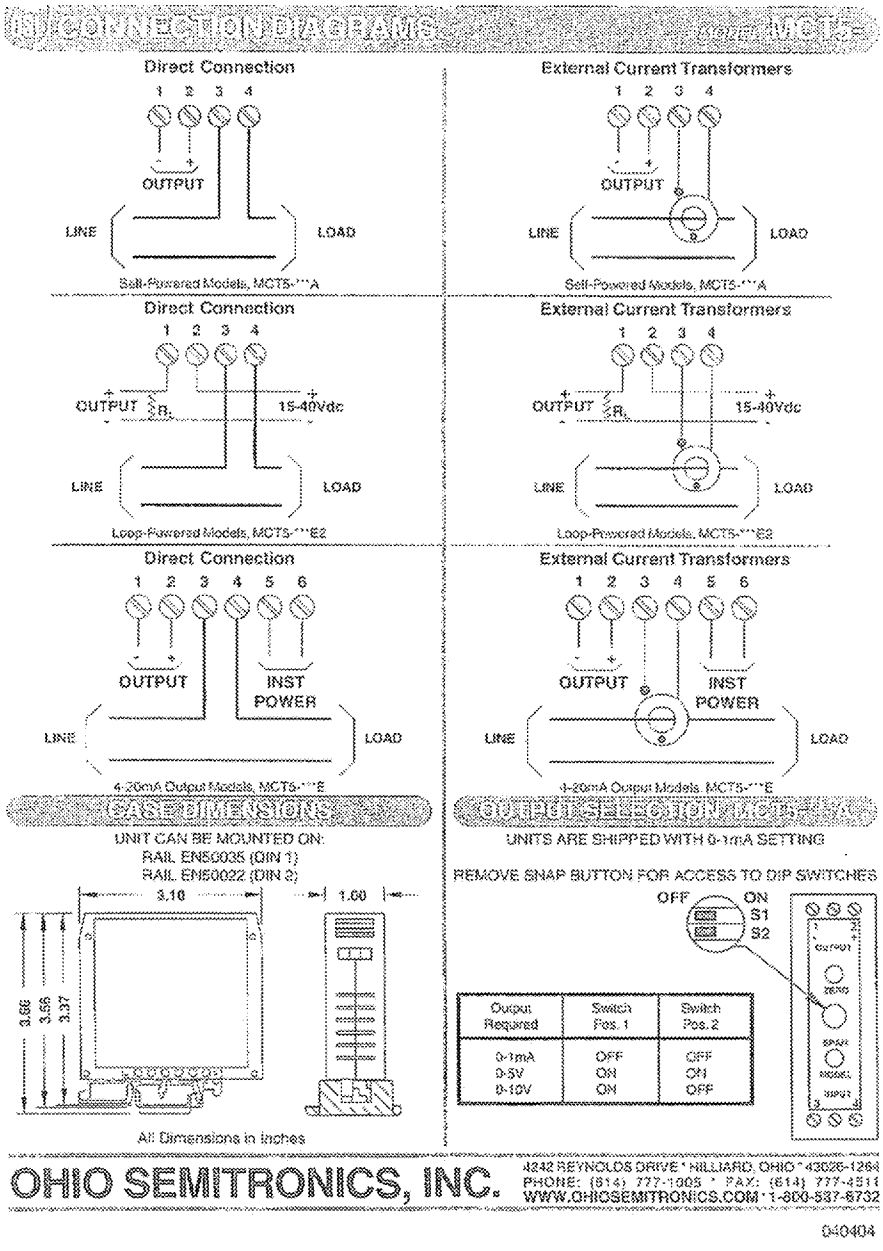
All MACT alarms and their time of acknowledgement will be on the PI monitoring system.

Pressure drop and fan amperage will be averaged on an hourly basis with the hour being an hour of operation, not necessarily a clock hour.

Appendix B:

CPMS Documentation:

- Ohio Semitronics, Inc. Single-Phase AC Current Transducer Installation and Operating Instructions.
- *Certificate of Compliance for Auburn TRIBO.d^2, Model 3400 Bag Leak Detector*
- Bag Leak Detection System Operation and Maintenance Manual



auburn SYSTEMS
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CERTIFICATE OF COMPLIANCE

CUSTOMER:	US Steel – ET Plant
PRODUCT:	TRIBO.d^2, Model 3400

This certifies that the TRIBO.d^2, Model 3400, has been tested and found to be in conformance with federal regulation 40 CFR 63, section 63.1350, paragraph (m) which states: The BLDS must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

Robert E. Newton

Auburn Systems
Product Development Manager,
Triboelectric Systems

Appendix C:

Definitions

Capture Device: A mechanical device with integral filter media and ID fans located at the end of the Capture System that entraps or entrains the fumes, dust and other non-gaseous pollutants generated by the Mixer Station under normal operating conditions.

Capture System: That equipment or devices including but not limited to hoods, fans, ductwork and dampers used to capture and convey emissions generated by the Mixer Station to the Capture Device. The physical limits of the Capture System extend from the South Discharge Hood to the inlet flange of the Capture Device.

ESS: *Environmental Software System utilized to track, report and document environmental requirements.*

Malfunction: Any sudden, infrequent, and not reasonably prevented deviation in the process or a mechanical anomaly causing an upset condition where the maximum allowable emission levels of the Capture Device are exceeded or the Capture System fails to provide valid data to the monitoring system within the prescribed measurement ranges. Examples may include but are not limited to alarm conditions caused by: baghouse filter media leakage, filter cleaning system failure (including insufficient air pressure), damper actuator failure, fan motor failure and breaking of a fan belt or fan belt slippage. Although not an alarmed condition, conveyor failure is also considered to be a *malfunction.*

PI A computer based process parameter monitoring system.

Primary Emissions Particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system.

Secondary Emissions Particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings and gaps or tears in ductwork to the primary emission control system.

Shutdown: The standard operational procedure (SOP) for removing the Mixer Station from operation for reasons of inspection, maintenance or repair.

Startup: The standard operational procedure (SOP) for bringing the Mixer Station back into operation after inspection, maintenance or repair.